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DRAFT ENVIRONMENTAL IMPACT STATEMENT

OPEN ROAD DENSITY STANDARDS

Amendment No.10 to the Flathead National Forest Land and Resource Management Plan

For Non-Wilderness Portions of the Forest in
Flathead, Lake, Lincoln, and Missoula Counties, Montana

November 1990

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The Proposed Action amends the Flathead National Forest Land and Resource Management Plan to clarify Open Road Density standards relative to travel management on Forest roads. The proposed standards will apply to all lands in the Flathead National Forest outside classified Wilderness. The proposal provides specific wording to the Land and Resource Management Plan regarding Open Road Density in Management Situation 1 and 2 grizzly bear habitat. The Draft Environmental Impact Statement describes the environmental effects of the Proposed Action.

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DRAFT ENVIRONMENTAL IMPACT STATEMENT
OPEN ROAD DENSITY STANDARDS

AMENDMENT NO. 10 to the
FLATHEAD NATIONAL FOREST
LAND and RESOURCE MANAGEMENT PLAN

Flathead National Forest
Flathead, Lake, Lincoln, and Missoula Counties, Montana

November 1990

Lead Agency: USDA Forest Service

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ABSTRACT

The Proposed Action amends the Flathead National Forest Land and Resource Management Plan to clarify Open Road Density standards relative to travel management on Forest roads. The proposed standards will apply to all lands in the Flathead National Forest outside classified wilderness. The proposal provides specific wording to the Land and Resource Management Plan regarding Open Road Density in Management Situations 1 and 2 grizzly bear habitat. This Draft Environmental Impact Statement describes the environmental effects of the Proposed Action.

Nine alternatives were considered that respond to the purpose of the Proposed Action and the major issues and concerns identified by the Interdisciplinary Team:

- **Alternative 1** - the "no action" alternative, represents the January 1986 Flathead National Forest Land and Resource Management Plan direction.
- **Alternative 2** - provides a variable Open Road Density standard that favors wildlife habitat security in the spring and recreation access in the summer while providing for limited use on restricted roads.
- **Alternative 3** - provides a variable Open Road Density standard that favors wildlife habitat security in the spring and recreation access in the summer while limiting limited use on restricted roads.
- **Alternative 4** - provides a variable Open Road Density standard that favors spring wildlife habitat security and recreation access in the summer while providing for limited use on restricted roads.
- **Alternative 5** - provides a variable Open Road Density standard that favors wildlife habitat security in the spring and recreation access in the summer while limiting limited use of restricted roads.
- **Alternative 6** - provides an Open Road Density standard that is less restrictive in the spring and more restrictive in the summer while providing for limited use of restricted roads.
- **Alternative 7** - provides an Open Road Density standard that is less restrictive in the spring and more restrictive in the summer while limiting limited use of restricted roads.
- **Alternative 8** - applies the most restrictive Open Road Density standard on a yearlong basis while providing for limited use of restricted roads.
- **Alternative 9** - applies the most restrictive Open Road Density standard on a yearlong basis while limiting limited use of restricted roads.

Comments on this draft must be received by the Forest Supervisor, Flathead National Forest, 1935 Third Avenue East, Kalispell, Montana 59901, by January 31, 1991.

Page

Summary . . . . S - 1

Chapter I - Purpose and Need

A. Proposed Action, Purpose and Need . . . . I - 1
B. Scope of Proposed Action . . . . I - 4

Chapter II - Alternatives

A. General Introduction . . . . II - 1
B. Alternative Development Process . . . . II - 1
  1. Introduction . . . . II - 1
  2. Scoping . . . . II - 2
  3. Environmental Issues . . . . II - 3
C. Alternatives Considered but not Given Detailed Study . . . . II - 5
  1. Introduction . . . . II - 5
  2. Specific Alternatives Eliminated from Detailed Study . . . . II - 5
D. Alternatives Considered in Detail . . . . II - 5
  1. Features Common to all Action Alternatives . . . . II - 5
  2. Alternative Descriptions . . . . II - 8
  3. Comparison of Alternatives . . . . II - 10

Chapter III - Affected Environment

A. Introduction . . . . III - 1
B. Forest-wide Goals, Objectives, and Standards Relevant to Proposed Action . . . . . . III - 1
C. Specific Resources . . . . III - 4
  1. Recreation . . . . III - 4
  2. Wildlife . . . . III - 5
  3. Other Resources . . . . III - 8

Chapter IV - Environmental Consequences

A. Introduction . . . . IV - 1
B. Effects Common to all Action Alternatives . . . . IV - 1
  1. Visual Quality and Cultural Resources . . . . IV - 1
  2. Water Quality, Soil, and Vegetation . . . . IV - 1
  3. Wildlife . . . . IV - 1
  4. Social and Economic . . . . IV - 1
  5. Mineral and Timber Activities . . . . IV - 2
  6. Fire Protection . . . . IV - 2
C. Direct and Indirect Effects of Alternatives 1, 2, 6, and 8 . . . . IV - 2
  1. Recreation . . . . IV - 2
  2. Wildlife . . . . IV - 7
D. Cumulative Effects of Alternatives 1, 2, 6, and 8 . . . . IV - 12
  1. Recreation . . . . IV - 12
  2. Wildlife . . . . IV - 13

Page

E. Specifically Required Disclosures . . . . . IV - 13
  1. Effects of the Alternatives on Women and Minorities . . . . . IV - 13
  2. Effects of the Alternatives on Floodplains and Wetlands . . . . . IV - 13
  3. Energy Requirements of Alternatives . . . . . IV - 13
  4. Effects of the Alternatives on Prime Farmland, Rangeland, and Forest Land . . . . . IV - 14
F. Possible Conflicts with Plans and Policies of Other Jurisdictions . . . . . IV - 14
G. Probable Environmental Effects that Cannot be Avoided . . . . . IV - 14
H. Relationship Between Short-Term Use and Long-Term Productivity . . . . . IV - 14
I. Irreversible and Irretrievable Commitments of Resources . . . . . IV - 15
J. Consistency with LRMP Standards Applicable to this Issue/Topic . . . . . IV - 15

Literature Cited . . . . . LC - 1

Glossary and Acronyms . . . . . GA - 1

List to Whom Copies Have Been Sent . . . . . LI - 1

List of Preparers . . . . . LP - 1

Appendices

A. Proposed Amendment No. 10 . . . . . A - 1

B. Tables and Figures of National Forest System Road Miles Open to Motorized Use on Flathead National Forest System Land Only

Glacier View District . . . . . B - 1
Hungry Horse District . . . . . B - 2
Spotted Bear District . . . . . B - 3
Swan Lake District (Swan Unit) . . . . . B - 4
Swan Lake District (Island Unit) . . . . . B - 5
Tally Lake District . . . . . B - 6
Total Forest . . . . . B - 7

C. Tables and Figures of Effects to Public Motorized Use

Glacier View District . . . . . C - 1
Hungry Horse District . . . . . C - 2
Spotted Bear District . . . . . C - 3
Swan Lake District (Swan Unit) . . . . . C - 4
Swan Lake District (Island Unit) . . . . . C - 5
Tally Lake District . . . . . C - 6
Total Forest . . . . . C - 7

Page

D. Tables and Figures of Residual Impact Values for Grizzly Bear MS-1 and MS-2 Considering Private Industrial, State, and National Forest System Roads; Administrative Road Use; and Highways

Glacier View District . . . . . D - 1
Hungry Horse District . . . . . D - 2
Spotted Bear District . . . . . D - 3
Swan Lake District (Swan Unit) . . . . . D - 4
Swan Lake District (Island Unit) . . . . . D - 5
Tally Lake District . . . . . D - 6
Total Forest . . . . . D - 7

E. Tables and Figures of Residual Impact Values for Grizzly Bear MS-1 and MS-2 Considering Private Industrial, State, and National Forest System Roads; Administrative Road Use; Highways; and Private Land

Glacier View District . . . . . E - 1
Hungry Horse District . . . . . E - 2
Spotted Bear District . . . . . E - 3
Swan Lake District (Swan Unit) . . . . . E - 4
Swan Lake District (Island Unit) . . . . . E - 5
Tally Lake District . . . . . E - 6
Total Forest . . . . . E - 7

F. Tables and Figures of Residual Impact Values for Elk Habitat Considering Private Industrial, State, and National Forest System Roads; Administrative Road Use; and Highways

Glacier View District . . . . . F - 1
Hungry Horse District . . . . . F - 2
Spotted Bear District . . . . . F - 3
Swan Lake District (Swan Unit) . . . . . F - 4
Swan Lake District (Island Unit) . . . . . F - 5
Tally Lake District . . . . . F - 6
Total Forest . . . . . F - 7

G. Tables of Square Miles of National Forest and Corporate Land, Open Road Density, and Residual Impact Value of Roads, Highways, and Private Land on Elk and Grizzly Bear Habitat by Ranger District, Season of Use, and Area Number

Existing Situation . . . . . G - 1
Alternative 2 . . . . . G - 6
Alternative 6 . . . . . G - 10
Alternative 8 . . . . . G - 14
Alternative 1 . . . . . G - 18

Page

H. Miscellaneous Wildlife Related Material

Wildlife Residual Impact Value Calculation Notes . . . . H - 1
Grizzly Bear Cumulative Effect Model Values . . . . H - 2
Grizzly Bear "Weighted" Road Impact Curve, Motorized . . . . H - 3
Grizzly Bear High Use Trail Impact Curve, Non-Motorized . . . . H - 4
Elk Spring, Summer, Fall Range Map . . . . H - 5
Elk "Weighted" Road Impact Curve, Motorized . . . . H - 6
1985 U.S. Fish and Wildlife Service Biological Opinion to LRMP . . . . H - 7
1989 U.S. Fish and Wildlife Service Amended Biological Opinion to LRMP . . . . H - 18
Biological Assessment for Federally-Listed Endangered, Threatened, and Proposed Wildlife Species . . . . H - 90

List of Tables

II-1 Levels of Use and Seasons of Use . . . . II - 3
II-2 Graphic Display of Alternatives . . . . II - 4
II-3 National Forest System Road Miles Open to Motorized Use on National Forest System Land . . . . II - 12
II-4 Effects to Public Motorized Use . . . . II - 12
III-1 Non-Wilderness Dispersed Recreation Visitor Day Projections . . . . III - 5
III-2 Recovery Strategy Monitoring, 1987 to 1989 . . . . III - 7
IV-1 National Forest System Road Miles Open to Motorized Use on National Forest System Land . . . . IV - 4
IV-2 Effects to Public Motorized Use . . . . IV - 4
IV-3 Example of Weighted Road Density Calculation . . . . IV - 8
IV-4 Grizzly Bear Residual Impact Value . . . . IV - 11
IV-5 Elk Residual Impact Value . . . . IV - 12

List of Figures

II-1 National Forest System Road Miles . . . . II - 1
IV-1 Grizzly Bear "Weighted" Road Impact Curve, Motorized . . . . IV - 9

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Summary

DRAFT ENVIRONMENTAL IMPACT STATEMENT
OPEN ROAD DENSITY STANDARDS

Summary

of the

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Amendment No.10 to the
Flathead National Forest
Land and Resource Management Plan

The need for greater emphasis on the management of **motorized vehicle use** of Forest roads has been evolving over the last few decades. The Flathead National Forest Land and Resource Management Plan (LRMP), relaeased in 1986, included guidelines for road management. Those guidelines specified a maximum Open Road Density (ORD) which, when implemented, would provide habitat security for grizzly bear and other wildlife, such as elk.

Attempts to implement the ORD standards have proven difficult because of differences in the public interpretation of terms and processes related to calculating ORD. Some interpretations would require restricting access on more roads for wildlife security. Others tend to require less restricted road access for greater motorized recreation opportunities.

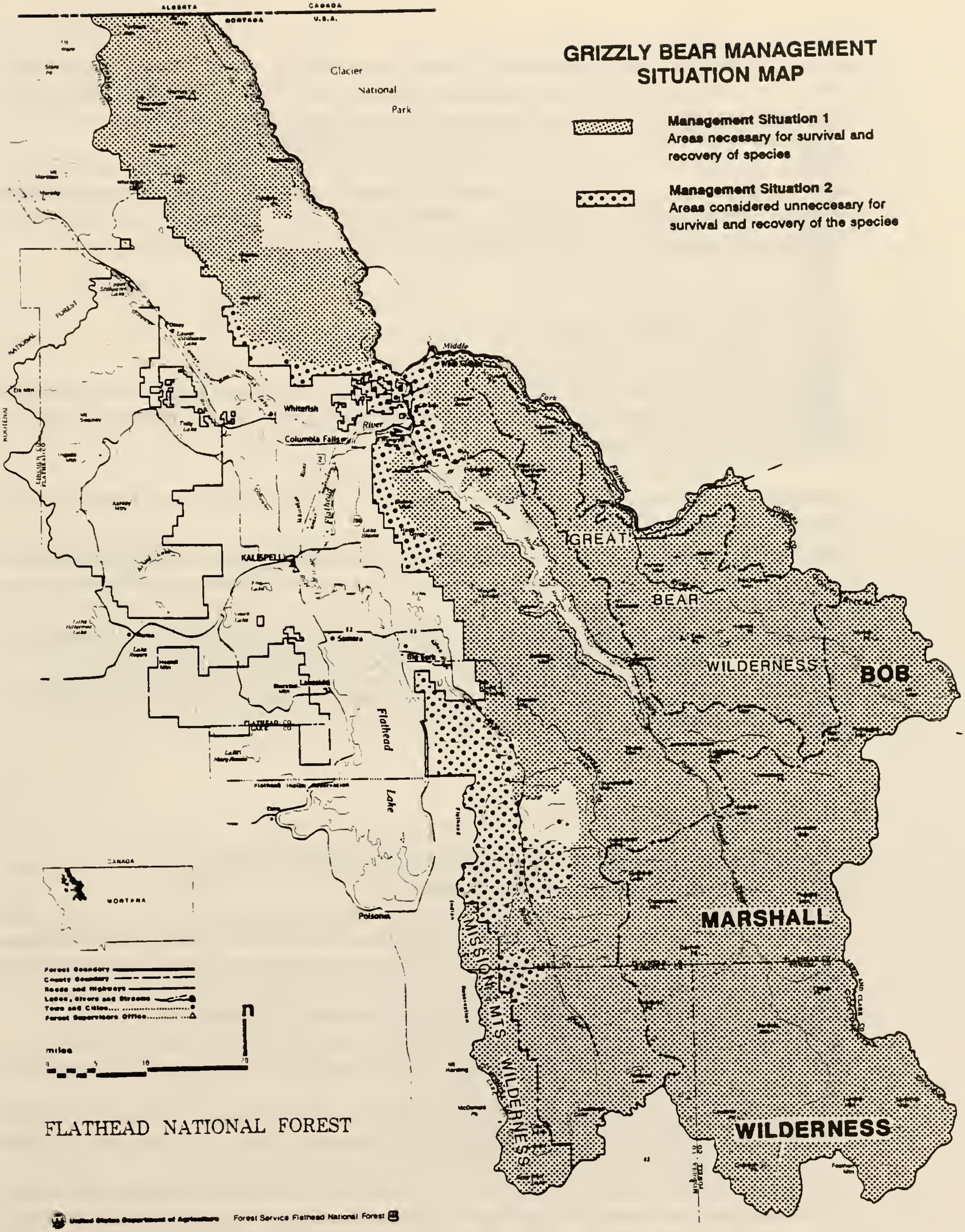
Open Road Density (ORD):
Miles of open roads, divided by the area in square miles in which the roads are located. Expressed in terms of average miles per square mile: (number) mi/mi^2

The Issue

The basic issue from a Forest management standpoint is: What is the appropriate ORD in areas occupied by grizzly bear and elk? The following questions must be considered in addressing this issue:

- What is a "road"?
- Should only roads under National Forest jurisdiction be used in ORD calculations?
- What size area should be used to compute average ORD?
- For what time period is the ORD standard applicable?
- Can some vehicle use occur on a road and still adequately meet the objective of wildlife security?
- What should the ORD standard be within Grizzly Bear Management Situation-2 (MS-2)?
- How does project implementation, primarily road construction, timber harvest and other large-scale resource management activities, relate to the ORD standards?

A map on the following page shows how the Flathead National Forest is divided by Grizzly Bear Management Situations. The proposed action focuses primarily on Management Situation 1 and 2 (see glossary, page 6).



GRIZZLY BEAR MANAGEMENT SITUATION MAP

▨ **Management Situation 1**
Areas necessary for survival and recovery of species

⠿ **Management Situation 2**
Areas considered unneccesary for survival and recovery of the species

FLATHEAD NATIONAL FOREST

United States Department of Agriculture Forest Service Flathead National Forest

The draft environmental impact statement on proposed Amendment 10 to the Land and Resource Management Plan considers the different interpretations, analyzes the effects and provides specific ORD standards which include definitions and procedures for calculation of Open Road Density.

The Forest Service and the U.S Fish and Wildlife Service are jointly responsible for the recovery of threatened and endangered species on National Forest Service lands. The Forest Service implements habitat management activities and the U.S. Fish and Wildlife Service regulates and oversees the recovery activities and acts as an advisor on management activities relating to the Endangered Species Act.

Alternatives Considered

Nine alternatives were developed to clarify ORD standards relative to travel management, taking into account the major issues and concerns identified through public input. Four of these alternatives are sufficiently distinct to merit comparison:

- **Alternative 1** the "no action" alternative represents the 1986 Flathead National Forest Land and Resource Management Plan direction.
- **Alternative 2** provides an ORD standard which fluctuates seasonally, being the most restrictive in the spring for habitat security, and the least restrictive in the summer for recreation, while providing for limited use on restricted roads.
- **Alternative 6** provides an ORD standard that increases habitat security and decreases recreation access from April 1 through November 30, while providing for limited use of restricted roads.
- **Alternative 8** provides the most restrictive ORD standard on a year-long basis while providing for limited use of restricted roads.

And the Proposed Action Is . . .

The preferred action, **Alternative 6** and the associated Amendment 10, sets the following travel management direction in answer to the issues discussed above:

- A road is defined as "a route, constructed or evolved, more than 300 feet in length that is reasonably and prudently driveable with a conventional passenger car or pickup." Features such as trails are not considered in the ORD calculation. The ORD standard will apply only to roads as defined above.
- Areas 5,000 to 15,000 acres in size will be used to calculate ORD in MS-1 and MS-2 areas which will include National Forest System lands, State lands, and Industrial Forest lands.
- The ORD standard will apply from April 1 through November 30 in MS-1 and MS-2 areas.
- A road will be considered "restricted" if restriction devices limit use, including administrative use, to no more than 5 vehicles per week.
- 2 miles per square mile is the proposed maximum ORD for some MS-2 areas. The remainder of MS-2 areas will have a maximum ORD of one mile per square mile. A maximum ORD standard of one mile per square mile is proposed for **all** MS-1 areas.
- The ORD standard proposed in Amendment 10 **will not** apply to areas during major project activity. Appropriate road management and/or other mitigation will be implemented during the project activity. The "appropriate" road access direction will be determined through site-specific analysis.

TABLE 1

Miles of Road Open For Motorized Use *
Existing Situation vs Alternative 6

	Existing Situation	Alternative 6	Amount of Change
Early Spring 4/1-5/14	1513	1340	-173
Late Spring 5/15-6/30	1577	1416	-161
Summer 7/1-8/31	2055	1763	-292
Fall 9/1-10/14	1744	1475	-269
Hunting 10/15-11/30	1578	1416	-162

* National Forest System roads on National Forest System lands.

The Effects

This proposal will reduce the number of miles of roads open for motorized use compared to the existing situation (See Table 1). ORD will be calculated over defined 5,000 to 15,000 acre areas in Grizzly Bear Management Situation 1 and 2. These calculations also include open roads on State and Industrial Forest lands. During the period of April 1 through November 30, habitat security will be increased for the grizzly bear and other big game species such as elk and deer. Positive effects on other resources such as water quality and fisheries are expected. Recreation access during the same period will decrease somewhat. The

TABLE 2

Effects of Alternative 6 on Public Motorized Use

	1000 mile-days*	% Change
User Type	Existing Situation	Alternative 6
Spring Bear Hunter	46	-2%
Recreation Driver	362	-18%
Fisherman	277	-17%
Woodcutter	362	-16%
Berry Picker	121	-18%
Fall Hunter	139	-17%

* Mile-days: product of days available times miles of road open to public motorized use.

Glossary

Alternative A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decision making. An alternative need not substitute for another in all respects.

Alternative, no action An alternative that maintains established trends or management direction.

Endangered Species Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

Habitat The place where an organism lives, including the entire range of environmental conditions required for its survival.

Land and Resource Management Plan (LRMP) The Flathead National Forest Land and Resource Management Plan (Forest Plan) provides integrated management direction for each resource on the Forest. The Forest Plan is in compliance with the National Forest Management Act of 1976 which requires the preparation of regional and forest plans.

Management Situation 1 (MS-1) Area that contains grizzly population centers (areas key to the survival and recovery of grizzlies where seasonal or year-long grizzly activity, under natural, free-ranging conditions is common) and habitat components needed for the survival and recovery of the species or a segment of its population.

Management Situation 2 (MS-2) Area that lacks distinct grizzly population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. By definition, Management Situation 2 areas are those considered unneccessary for survival and recovery, although the status of such areas is subject to review and change according to demonstrated grizzly population and habitat needs.

Mile-Days Product of miles of roads open times the number of days they are open. Used for comparison of alternatives.

Open Road A road is considered open when it is reasonably and prudently driveable by a conventional passenger car or pickup and is not obstructed by a physical barrier or has no administrative restriction. If motorized vehicle use levels exceed an average of five vehicles per week during the access restriction

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Comments on this draft must be received by the Forest Supervisor, Flathead National Forest, 1935 Third Avenue East, Kalispell, MT 59901, by January 31, 1991. A copy of the Draft Environmental Impact Atatement can be obtained at the same address.

CHAPTER I

PURPOSE AND NEED

CHAPTER I - PURPOSE AND NEED

A. PROPOSED ACTION, PURPOSE AND NEED

The Forest Service proposes amendment of the January 1986 Flathead National Forest Land and Resource Management Plan (LRMP) to clarify Open Road Density (ORD) standards relative to travel management on Forest roads. This amendment clarifies the ORD standards for various areas within the Forest, and how the standards will be implemented and monitored. The objective is to provide programmatic travel management direction until the cumulative effects model is operational, through a consistent process for calculating and applying an interim ORD standard.

The Proposed Action will result in LRMP Amendment 10 and establish a standard in all grizzly bear Management Situation 1 (MS-1) areas of 1.0 mi/mi^2 maximum ORD during the period April 1 to November 30. A standard of 2 mi/mi^2 maximum ORD during the period April 1 to November 30 will be established in the grizzly bear Management Situation 2 (MS-2) lands described in Alternative 6. All other MS-2 lands will be treated the same as MS-1. In MS-1 and MS-2 areas, ORD will be calculated over defined 5,000 to 15,000 acre areas (see enclosed maps), including State and industrial forest lands and their roads. Table II-6 on page II-55 of the LRMP will be replaced to reflect these standards. In areas not in MS-1 and MS-2 the standard will be as shown on page II-55 and will continue to be applied over Geographic Units. Site-specific project effects will be evaluated on the 5,000 to 15,000 acre areas Forest wide.

"When administrative activities or a project, such as a timber sale, significantly changes the objectives of the ORD, a site-specific analysis of travel impacts will be made and appropriate mitigating measures established" (page 24, U.S. Fish and Wildlife Service biological opinion of July 18, 1989). The ORD standard does not apply during the specific time period that a proposed project or activity is authorized to be implemented. This is to allow access to vehicles so that the specific Forest management activity may be undertaken. As an example, the ORD standard will not apply during the time actual logging of a timber sale is taking place. Appropriate short-term road management will be implemented based on the site-specific considerations and other standards and guidelines in the LRMP. Appropriate site-specific road management or mitigation measures will provide adequate wildlife security during the life of the project.

The intent of this proposal is to resolve controversy surrounding the ORD standard and how the ORD standard is applied, especially within MS-1 and MS-2 areas. The ORD standards appear on LRMP II-30 and II-55. LRMP Appendix C provides some guidelines for implementing travel management, but it does not provide the specifics needed to calculate and apply the standards listed on LRMP II-55.

Controversy over the ORD standards began with the appeals of the Regional Forester's January 22, 1986, decision to implement the LRMP. Thirty nine appeals of that decision were filed, with many of the issues involving road management. On August 31, 1988, the Chief rendered a decision on two appeals, #1467 (Swan View Coalition) and #1513 (Resources Limited, Inc. and Five Valleys Audubon Society).

The Proposed Action (Amendment 10) relates to pages 42 to 50 of the Chief's decision on those two appeals. Specifically, this action responds to the second paragraph on page 47 of the Chief's decision which states:

> *"We do not find specific wording in the LRMP regarding an open road density for MS-1 grizzly bear habitat. Therefore, the Regional Forester is directed to clarify the point by amending the LRMP to incorporate an open road density standard for all MS-1 grizzly*

> *bear habitat of one mile per square mile or less until such time as a cumulative effects model is operational or further consultation with FWS determines otherwise."*

In response to the Chief's decision, two LRMP amendments were planned. Amendment 10 was to clarify the ORD standards by amending the LRMP to include the language recommended in the U.S. Fish and Wildlife Service's May 15, 1985, and July 18, 1989, biological opinions on the LRMP. A separate amendment was planned to add standards detailing how the general standard would be implemented.

Amendment 10 was approved as a non-significant amendment on July 31, 1989. That decision was subsequently appealed. Due to the complexities raised in the appeals, the July 31, 1989 Amendment 10 was withdrawn. The decision was made to re-issue Amendment 10 after completing additional environmental analysis and documentation which would disclose the effects of ORD standards, together with alternative methods of implementation. Thus, Amendment 10 will address the ORD standards in LRMP Chapter II, along with the associated implementation and monitoring processes needed.

In addition to appeals of the LRMP and LRMP amendments, appeals of several projects attempting to implement the LRMP have involved controversy over ORD's. The Krause Creek-Peters Ridge Travel Restrictions and the Noisy Face Travel Restrictions were appealed, as was the Lion Whelp Timber Sale. The 1987 Travel Map was appealed to the Regional Forester and then to the Chief. The Forest Supervisor was directed to produce an updated travel map taking into consideration issues raised in those appeals. As the Forest proceeded with the scoping to do this, it became apparent there was confusion and/or different interpretations relative to the ORD standard. The specific facets and concerns of the ORD issue which have been identified from previous efforts to establish and implement ORD standards are discussed below:

- What is the specific ORD standard within MS-2?

  The only ORD standard displayed in the LRMP is 1 mi/mi² within occupied grizzly bear habitat. However, the U.S. Fish and Wildlife Service issued a biological opinion (1985) and an amended opinion (1989) on the LRMP indicating a standard of 1 mi/mi² in MS-1 and 2 mi/mi² in MS-2 would not jeopardize the grizzly bear. They stated the following:

  > "However, until the CEA model is operational, we recommend that in the interim an open road density of 1 mile per square mile of habitat or less be maintained in MS1 and approximately 2 miles per square mile of habitat or less be maintained in MS2. The projected road densities in the Forest Plan clearly indicate that a substantial road closure program will be required to meet grizzly management objectives". (USFWS 1985)
  >
  > and "Even though 500 miles of road may be built to remove timber, the number of miles of roads open to public travel will be restricted to meet the open road density standards for grizzly bear management situations I and II (≤1 mile/square mile in MS-I and ≤2 miles/square mile in MS-II)". (USFWS 1989)

- What is a "road"?

  The LRMP did not contain a clear definition of a road. The Flathead National Forest's position has been that a facility will not be inventoried as a road if it is not driveable and is not needed to manage National Forest System lands. Some publics have requested that all linear motorized or potential motorized routes, including trails, be included in the ORD calculations.

- Should only roads under National Forest jurisdiction be used in ORD calculations?

  The current LRMP applies the ORD standard only to National Forest system roads on National Forest System lands. Some people believe that all roads on all ownership should be included in the ORD calculation.

- What size area will be used to compute average ORD?

  The Forest Service interpretation has been that ORD was to be averaged over the LRMP Geographic Units, which range in size from 20,000 to 80,000 acres (reference LRMP II-55). The LRMP FEIS compared the effects of alternatives using a discussion and disclosure of average ORD on non-wilderness lands (LRMP FEIS IV-120 to 124). The average ORD of 1.3 mi/mi² disclosed in the FEIS is the cumulative effect of the ORD by Geographic Unit displayed on LRMP II-55. Some people believe the standard should apply to each section or square mile of land. Many wildlife biologists suggest a more appropriate size area would be 5,000 to 15,000 acres. The 5,000 to 15,000 acre size is suggested in the July 18, 1989, amended U.S. Fish and Wildlife Service biological opinion to the LRMP. There are also varied opinions on whether or not State, intermingled industrial forest, and private lands should be included in calculations when determining ORD.

- What time period is the ORD standard applicable to?

  There are two opinions or interpretations as to what time period was intended in the LRMP and the Chief's August 31, 1988, decision on LRMP appeals #1467 and #1513. Some people believe the same standard applies year-round. The LRMP (reference LRMP II-29 to 30, Standards 12 and 16) indicates a seasonal application was appropriate. As a result of the Chief's direction, the Flathead National Forest operates under a interim standard of 1 mi/mi² yearlong.

- Can vehicle use occur on a road and still accomplish the objectives of the ORD standards?

  Some people believe no use can occur to be in compliance with the ORD standard. The Flathead National Forest's position is that some use can occur and still meet the intent of the ORD standards. The U.S. Fish and Wildlife Service stated in their July 18, 1989 amended biological opinion for the LRMP.

  > "A road is considered closed when it is not reasonably driveable by a conventional vehicle due to natural obstructions or when a physical or enforceable administrative restriction or both is employed and managed such that motorized vehicle use level does not exceed 5 vehicles per week during the restriction period".

- How does project implementation relate to the ORD standards?

  This concern focuses on Standard 16 (LRMP II-30). A specific project may require that some roads normally restricted, be used. The Flathead National Forest's interpretation of LRMP direction is that ORD standards do not apply during project implementation. Clarification is needed regarding road management during project activity.

The Proposed Action, Alternative 6 and the associated LRMP Amendment 10, will employ the following relative to the concerns discussed above:

- An ORD standard of 2 mi/mi^2 for some specific MS-2 area.
- The ORD standard will apply only to defined roads.
- Areas 5,000 to 15,000 acres in size will be used to calculate ORD in MS-1 and MS-2 areas. The LRMP Geographic Area will be used for all other areas of the Forest.
- The ORD standard will apply April 1 thru November 30 in MS-1 and MS-2 area. All other area will remain as shown in LRMP on page II-55.
- A road will not be considered "open" if restriction devices reduce the vehicle use, including administrative traffic, to no more than 5 vehicles per week.
- The ORD standard proposed in Amendment 10 (Appendix A) will not apply to project areas. Appropriate site-specific road management and/or other mitigation will be implemented during project activity. The "appropriate" action will be determined by site-specific analysis.

B. SCOPE OF PROPOSED ACTION

The LRMP provides programmatic direction for travel management activities through its goals, objectives, standards and guidelines, and "management area" direction. The environmental effects of the decision to implement the LRMP goals, standards, and guidelines are disclosed and compared to alternatives in the LRMP FEIS and Record of Decision. This analysis and Proposed Action are tiered to the LRMP FEIS, and information contained in that document will not be repeated here. This analysis will correct and/or add to the information contained in the LRMP FEIS.

The basic purpose of road restrictions relative to wildlife security is to limit the amount of human use of an area. Restricting some or all motorized transportation generally accomplishes this objective.

The travel management under consideration is for the road system on Flathead National Forest. The primary mode of travel to be addressed in this analysis is motorized use (including snowmobiles, motorcycles, ATV's, etc., as well as conventional vehicles) on roads. This proposal will influence the degree of motorized access permitted on existing and future roads within the Flathead National Forest. This proposal will not determine whether a road continues to exist or is constructed.

Off-road motorized vehicle use, including snowmobiles, on areas and trails was considered in the initial scoping but was dropped from this proposal. As a result of the Cheif's LRMP decision the scope of this proposal was limited to focus only on the issues and concerns centered around the ORD standards.

This proposal does not address site-specific road management issues. It is limited to clarifying the LRMP with respect to what the average ORD standard is and where, when, and how the standard will be applied. This includes clearly stating the ORD standards, definitions of terms, and establishment of processes which will then be applied in subsequent site-specific road management decisions. The ORD standard addressed in this proposal does not apply during site-specific project implementation.

To ensure compliance with the Endangered Species Act, the U.S. Fish and Wildlife Service was informally consulted throughout the analysis. The Forest Service will request a formal biological opinion on the Proposed Action.

The analysis of this proposal also considers Plum Creek Timberlands and State of Montana forest lands within the general forested environment that are intermingled with National Forest System lands. A master agreement between the parties established a framework for a joint road management effort (April 18, 1989, see project files). A sub-agreement specific to the Flathead Forest is in the process of formulation. Full implementation of this proposal will be dependent on joint management efforts with Plum Creek Timberlands and Montana Department of State Lands.

CHAPTER II

ALTERNATIVES

CHAPTER II - ALTERNATIVES

A. GENERAL INTRODUCTION

This chapter describes the alternatives developed and analyzed to address PURPOSE AND NEED described in Chapter I and a "no action" alternative. All alternatives require an amendment to the LRMP programmatic direction for management of motorized use of roads within the Flathead National Forest. The amendment includes a clear statement of the desired ORD for given areas of the Forest, and direction on how to apply ORD standards to site-specific areas.

B. ALTERNATIVE DEVELOPMENT PROCESS

1. Introduction

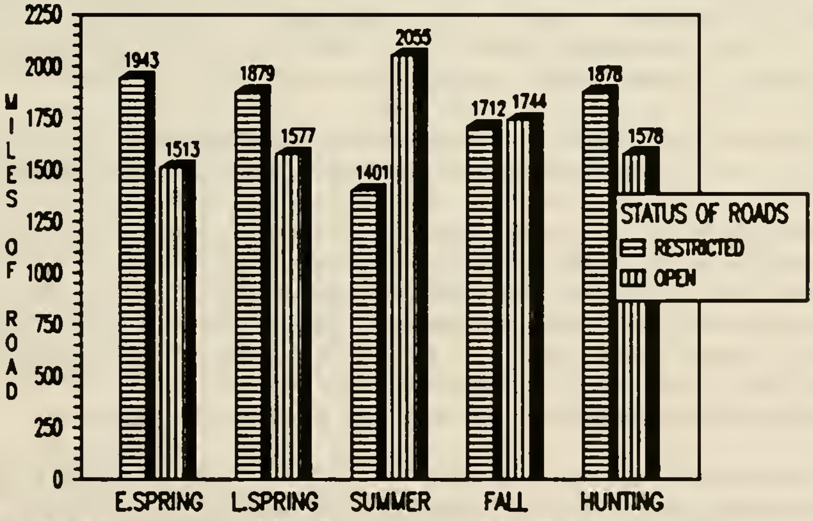
Alternative 1 is the LRMP direction and is considered the "no action" alternative.

A range of alternatives were developed to meet the purpose and need for the Proposed Action, and to address the two environmental issues and several concerns identified in the scoping process.

The existing situation is the current level of LRMP implementation, and is displayed for reference only. It is not the "no action" alternative. The miles restricted and unrestricted as of January 1990 to public motorized use, is shown on the enclosed maps and Figure II-1. The alternatives are compared to the existing situation.

FIGURE II-1. NATIONAL FOREST SYSTEM ROAD MILES

ROAD MILES BY SEASON OF USE– EXISTING SITUATION, JAN 1990



E. SPRING=4/1 –5/14; SUMMER=7/1– 8/31; HUNTING=10/15–11/30
L. SPRING=5/15–6/30; FALL = 9/1–10/14

2. Scoping

History of the LRMP and project appeals is described in Chapter I. As a result of the appeal of the 1987 Travel Map, public and internal scoping on travel management was completed during the fall of 1988 and spring of 1989, with the intent of updating the 1987 Travel Map. This scoping consisted of news media public contact and written contact to 300(±) groups and individuals who expressed interest in travel management on the Flathead National Forest. In addition, meetings were held with interested groups and individuals. Meetings were also held with the Chairman of the Swan View Coalition and local members of the Montana Trail Bike Riders Association (both were appellants of the 1987 Travel Map).

Notice of Intent to prepare an EIS on a LRMP amendment clarifying travel management standards, including issuance of a revised Travel Map, was published in the Federal Register on May 15, 1989.

In June 1989, a news release was forwarded to approximately 300 persons on the LRMP mailing list asking for input on the travel map proposal.

On October 26, 1988, over 1,175 LRMP mailing list addressees were notified of the Chief's appeal decision and of the Forest's intent for amendments to provide the relief granted by the Chief. Recipients were asked to reply if they wanted to be involved in reviewing draft amendments or receive final amendments only.

In response to the Chief's decision on LRMP appeals, on December 12, 1988, a package of Draft Amendments 3 through 14 were mailed to 310 respondents who wanted to review draft amendments.

A decision was made on Amendment 10 on July 31, 1989. This decision was subsequently appealed. As a result of the appeal, the decision was withdrawn. A revised Notice of Intent to publish an EIS was published in the Federal Register on March 1, 1990. The public was thereby notified of the change in scope of the Proposed Action to address only amendment of the LRMP relative to management of vehicle use on roads. This update was announced in April 1990 through the local news media and by letter to those on the travel management mailing list.

The completeness of the Forest's road inventory was questioned in the 1987 Travel Map appeal and again during scoping. During the summers of 1988 and 1989, an intensive road inventory of all MS-1 and MS-2 area on National Forest System lands was completed. The road inventory identified linear features on the Forest which varied considerably from seldom used one-track features to well used roads driveable by two wheel drive vehicles. As a result of this inventory the Forest in 1988 through 1990 undertook construction of physical barriers (berms) and other actions to render many of the linear features unuseable as roads for passenger cars or pickups. Several hundred features were reviewed; if the features remained reasonably driveable they were added to the Forest road inventory. (The Forest utilized the definition of road as defined on page II-6 of this DEIS.)

The road inventory process was conducted utilizing the best information available to the Forest. The information included the most recent aerial photography, information furnished by the Swan View Coalition for the Swan Valley area, and a thorough ground search were all employed. The inventory and procedures used were most intense for Forest areas in MS-1 and MS-2 grizzly bear habitat in order to most accurately reflect the effects of meeting the ORD standards proposed by this Amendment 10. In those areas outside MS-1 and MS-2 the ground-truthing of inventory data will be completed over the next few field seasons. In addition, the road inventory will be updated as appropriate based on any new information; particularly as new photography or satellite imagery is acquired. Any changes in the road inventory, however, would not change the ORD standards proposed in this Amendment 10. The ORD standards will be met. Therefore, if new information does identify any additional roads not previously inventoried the consequence would be a concomitant increase in road restrictions to meet the ORD standards for MS-1 and MS-2.

The amount of motorized use on forest roads is important information for both recreation and wildlife management considerations. Estimates were developed of the amount of motorized use occurring on all forest roads. Each District developed road use estimates using traffic counter information and the collective judgement of District road managers. Road use estimates were developed for each of six seasons and six use classes (Table II-1). Weekly time frames and use class levels were used rather than number of vehicles per day, to reduce error rates and still provide data for analysis purposes.

TABLE II-1 - LEVELS OF USE AND SEASONS OF USE

LEVELS OF USE		SEASONS OF USE
Class	Vehicles Per Week	Dates and Season
1	≤ 1	April 1 - May 14 (ES)
2	2 TO 5	May 15 - June 30 (LS)
3	6 TO 20	July 1 - August 31 (SU)
4	21 TO 100	September 1 - October 14 (FA)
5	101 TO 500	October 15 - November 30 (HU)
6	> 500	December 1 - March 31 (WI)

During informal consultation for this analysis, the U.S. Fish and Wildlife Service's July 1989 amended biological opinion for the LRMP identified that LRMP Geographic Units of 20,000 to 80,000 acres in size are not appropriate for calculation of ORD in relation to wildlife impact analysis. The use of large areas to calculate ORD may allow for high ORD in some portions and low ORD in other portions within the same analysis area. This could lead to unaccounted for and unknown levels of impact. Areas of 5,000 to 15,000 acres are a more appropriate size for ORD analysis. These identified areas are referred to in the remainder of this document as bear management areas (BMA's) as shown on included maps.

3. Environmental Issues

Two primary environmental issues were identified through appeals, scoping, and individual public contacts. Both of these issues will be affected by the ORD standard and its implementation. They are:

(1) **The impact of open roads on Threatened and Endangered (T&E) wildlife species and other wildlife.**

Public scoping, Forest Plan appeals, and 1987 Travel Map decisions by the Chief identified wildlife resources as a major road management concern.

Road access was identified as having the potential to influence the effectiveness of wildlife habitats and increase big game harvest rates and mortality potentials for T&E

species. There is an identified public concern that adequate habitat be available to provide huntable levels of big game species in traditional areas across the Forest, and that T&E species have suitable habitat and acceptable mortality rates to recover the species.

Residual Impact Values for grizzly bear and elk were used to measure the wildlife resource issue and will be used to identify the condition of the Decision Area and the effects of the proposed road management (see Appendix D, E, and F Tables and Figures). Residual Impact Value is an approximation of available space and risk of mortality when related to encounter potential. Both elk and grizzly bear are sensitive to disturbance from activities associated with roads. Residual Impact Values were developed for all BMA's and aggregated for Districts and the Forest. Differences in habitat suitability were estimated by alternative for the roaded area of the Forest and the Districts. The effect on grizzly bear and elk is an estimate of the overall impact from the road system and its management at a point in time.

(2) The effect of road restrictions on motorized vehicle access for recreational purposes.

Recreational use, other than motorized use, is generally not restricted. Berry pickers and firewood cutters have complained that road closures have limited their access to wood gathering areas and berry patches. All terrain vehicle (ATV) users expressed a concern that they have no place they can legally ride on the Forest. Hunters have complained when access to their campsites or hunting areas have been restricted. In order to attain the goals, and comply with the standards, and Forest travel planning direction in the LRMP (III-1 to 2), impacts on the various user groups have been evaluated on the basis of open road miles by use season and mile-days available to the various user groups.

TABLE II-2 - GRAPHIC DISPLAY OF ALTERNATIVES (X Indicates what was used for each alternative)

	Ownership Included		Areas Used to Calculate ORD		MS-1 Habitat ORD *		MS-2 Habitat ORD *		Effectiveness (Vehicles/Week)	
Alternatives	National Forest	National Forest, Industry, & State	Geographic Units 20,000 to 80,000 Acres	Bear Management Areas 5,000 to 15,000 Acres	Varied	1 mi/mi² 4/1 - 11/30	2 mi/mi² 4/1 - 11/30	1 mi/mi² 4/1 - 11/30 or Varied	5 or Less	1 or Less
1 LRMP	X		X			X		X	←1→	←1→
2		X		X	X ■		X		X	
3		X		X	X ■		X			X
4		X		X	X ■			X ■	X	
5		X		X	X ■			X ■		X
6		X		X		X	X		X	
7		X		X		X	X			X
8		X		X		X		X	X	
9		X		X		X		X		X

NOTE - Alternatives carried through this document are highlighted

* Only the 11 BMA's listed on II-9 are considered for 2 mi/mi². The remaining MS-2 area is managed at the same ORD as MS-1.

←1→ Not addressed in the LRMP

■ VARIED (for Alternatives 2-5)
Spring 4/1-7/1 = 0.8 mi/mi²
Summer 7/2-8/30 = 1.5 mi/mi²
Fall/Hunting 9/1-11/30 = 1.0 mi/mi²

C. ALTERNATIVES CONSIDERED BUT NOT GIVEN DETAILED STUDY

1. Introduction

Initially, nine alternatives were developed to respond to all combinations of the issues and concerns discussed in Chapter 1 (see Table II-2). The alternatives range from least impactive to the recreation user at the expense of some wildlife habitat security, to the least impactive to wildlife habitat security at the expense of recreation opportunity.

Preliminary analysis indicated no meaningful differences between some alternatives. The U.S. Fish and Wildlife Service's amended July 1989 biological opinion to the LRMP and informal consultation supported the preliminary analysis. These findings revealed no need to carry some alternatives forward.

2. Specific Alternatives Eliminated from Detailed Study

Alternatives 3, 5, 7, and 9

These alternatives address the use of restricted roads at the one or less vehicle per week level. Residual Impact Value slight differences between use levels of ≤1 vehicle per week, versus ≤5 vehicles per week. The U.S. Fish and Wildlife Service's amended July 18, 1989, biological opinion and informal consultation established their consensus with low level use of restricted roads up to ≤5 vehicles per week. This use could consist of both administrative use and or unauthorized public use. This led to adopting the "five or less vehicle per week" as a constant to all alternatives, which eliminated Alternatives 3, 5, 7, and 9 from further consideration.

Alternative 4

Alternative 4 applied a variable standard to all MS-1 and MS-2 areas, while Alternative 2 provided a standard of 2 mi/mi^2 yearlong in selected MS-2 lands. It was determined there was no meaningful difference in the Residual Impact Value between Alternative 2 and Alternative 4; therefore, Alternative 4 was dropped from further consideration. Alternative 2 was carried forward because it provided a higher level of recreation access with a similar Residual Impact Value for wildlife.

D. ALTERNATIVES CONSIDERED IN DETAIL

Alternatives 1, 2, 6, and 8 were carried forward as alternatives responding to the issues and concerns. Several features are common to all alternatives. These common features are presented first and separately, to minimize redundancy.

1. Features Common to all Action Alternatives

The common features involve definitions and the processes used to calculate ORD in all alternatives. Resolution of some concerns are presented here and are constant across the alternatives.

a. Definitions:

Road - A route, constructed or evolved, more than 300 feet in length that is reasonably and prudently driveable with a conventional passenger car or pickup.

Open Road - A road is considered open when it is reasonably and prudently driveable by a conventional passenger car or pickup and is not obstructed by a physical barrier or has no administrative restriction. If motorized vehicle use levels exceed five vehicles per week, a road is considered open.

b. Processes:

☐ Administrative effectiveness of public restrictions will be monitored relative to the ≤5 vehicles per week. The "five vehicles per week" will be treated as a maximum, with administrative use managed accordingly. Administrative use will be managed on a "check in" system to reduce habitat disturbance during key wildlife use periods.

☐ ORD is calculated by dividing the number of miles of "open road" by the number of net applicable square miles in the specified area.

☐ Roads on small private land ownership and their areas were not included in the ORD calculation. Roads are a focus of activity and, therefore, impact wildlife in the general forest environment. The general forest environment includes all National Forest System, industrial forest (primarily Plum Creek Timberlands), and State of Montana lands. Conversely, roads are only a minor proportion of the activity or impact associated with other private lands. These other private lands include residential development and associated structures, access roads, highways and County roads, domestic livestock and associated facilities, etc. A calculation of road density could be done for these other private lands, but it is not a true picture of the impacts associated with these areas. Because road density is not a reasonable or proper index of impacts associated with residentially-developed private lands, these lands and associated roads were not used in calculating road densities. Rather, impacts associated with these private lands were incorporated into the Wildlife Cumulative Effects Analysis in Chapter IV. In the calculation of effects, it was assumed that these private lands had high activity levels. Also, since highways and County roads tend to be associated with developed private land areas, they were included in road density calculations only when non-industrial private land was less than 15 percent of the analysis area being considered.

☐ The LRMP road management direction, other than the ORD standard, is satisfied first and is constant across all alternatives. Then, additional restrictions are applied as needed in each alternative to satisfy the ORD criteria for that alternative. The assumption was made that the existing situation complies with or exceeds the amount of restrictions needed to satisfy all road management direction except the ORD standard. This assumption and process results in some areas being constrained to an ORD that is less than required by the standard.

> **Example:** In the Bunker Creek drainage on the Spotted Bear District, the LRMP set specific road management direction resulting in an ORD considerably less than 1.0 mi/mi^2 (reference LRMP IV-45).

☐ The ORD standard being addressed in this proposal does not apply to or consider projects such as a timber sale, oil and gas development, etc. Road management during project activity will be implemented based on site-specific considerations and other standards and guidelines in the LRMP, Interagency Grizzly Bear Guidelines (IGBG), and in compliance with the ESA. During the life of the project, appropriate site-specific road management and/or mitigation measures will be implemented to provide adequate wildlife security. This would be displayed in appropriate documentation. The ORD standard would not apply in the project area during the project period.

☐ The same 5,000 to 15,000 acre BMA's shown on the attached maps were used in Alternatives 2, 6, and 8; while Alternative 1 used LRMP Geographic Unit areas to calculate ORD.

☐ The land ownership used in Alternatives 2, 6, and 8 is National Forest System, industrial forest, and State of Montana. Alternative 1 used only National Forest System land.

☐ The original LRMP standards were used for all portions of the Forest that are not MS-1 or MS-2. This is primarily the Tally Lake District and the Island Unit portion of the Swan Lake District.

☐ The ORD standard is not applied between December 1 and March 31. The grizzly bear ORD applies during the April 1 to December 1 period. This period covers the time that bears are expected to be mobile, but does not cover the denning period. During the period that the ORD does not apply, December 1 to March 31, road system use is substantially restricted due to snow cover. Thus grizzly bears are unaffected by the road system during the December 1 to March 31 period due to the low level of use on roads because of snow levels and also because bears are denning during this period and make limited use of general areas across the Forest. Site-specific considerations may be required to deal with potential impacts to denning areas.

☐ The ORD standard and its application is considered programmatic. Site-specific variance of these standards may be necessary over time, based on site-specific information for any BMA. Any adjustment raising or lowering the ORD for a BMA will require consultation with the U.S. Fish and Wildlife Service and a site-specific amendment to the LRMP. Site-specific analysis shall be completed prior to issuing a site-specific amendment. The primary site-specific factors that will form the basis for an ORD variance will be:

- Unusual road configuration, such as a road being the boundary of the BMA or parallel roading situations.
- Specific habitat information that would provide a reliable prediction of the absence or presence of grizzly bear during a specific time period, and/or the value of the habitat to grizzly bear.
- Site-specific studies that verify the absence or presence of grizzly bear during a specific time period.

c. Implementation

On-the-ground implementation of the ORD standard will begin when a decision on this proposal (Amendment 10) is adopted, and it is the intent of the Forest to complete on-the-ground implementation of the ORD standard within 1 year. Implementation will consist of employing a mixture of restriction devices as appropriate to restrict or close roads to meet the ORD standards. The devices will consist of signs, earth barriers, rock barriers, or gates. The type of device may vary over time, based on site-specific monitoring information which will evaluate the effectiveness of the devices. This proposal (Amendment 10) does not determine which actual roads will be restricted or closed - it only sets the density standards which will be met in each BMA of the Forest. Once

Amendment 10 is adopted, each District will make determinations as to which roads will be restricted to meet the ORD standards.

d. Monitoring

The described alternatives and indicated effects are based upon the assumption that the alternative is accurately implemented, and that human use levels are within the range used in this analysis. A monitoring program will be required to insure that the selected alternative is implemented as described. A monitoring plan will be developed for the selected alternative to determine use on both restricted and unrestricted roads and the ORD use period. The plan will also include monitoring of motorized use of trails.

2. Alternative Descriptions

Alternatives 1, 2, 6, and 8 were carried forward for detailed consideration. Table II-2 provides a graphic display of the following descriptions:

Alternative 1 (Forest Plan/No Action)

Alternative 1 reflects LRMP direction. The specific features highlighted respond to the issues and concerns described in this chapter. Only National Forest System land is used in calculating ORD and is averaged over the Geographic Unit as delineated in the LRMP. The LRMP does not clearly state a standard ORD of 1 mi/mi^2 for MS-1 areas, but 1 mi/mi^2 was the intended standard as stated in Standard 16 (LRMP II-30). The LRMP is vague with respect to when the standard applies. It suggests in various places that the standard would be applied seasonally or only during grizzly bear use periods. On the other hand, the values and statements in the LRMP FEIS support a year-round application of the standard. Thus, year-round application is used for this alternative. The LRMP FEIS treated MS-2 areas the same as MS-1, even though the original U.S. Fish and Wildlife Service's 1985 biological opinion for the LRMP allowed a standard of 2 mi/mi^2. The 1 mi/mi^2 for MS-2 areas is used for this alternative. The Geographic Unit area is used to calculate ORD, using only National Forest System land areas and roads.

Appendix B Tables and Figures for Alternative 1 was developed by first calculating the maximum miles that could be open on a Geographic Unit as defined by the ORD standard applicable to the area.

Example: $(1 \text{ mi/mi}^2) \times (120 \text{ mi}^2) = 120$ miles of open road.

This value was then compared to the existing situation for the Geographic Unit. If the calculated value was greater than the existing situation, the existing situation value was used based on the assumption stated on II-6. If the calculated value was less than the existing situation, the calculated value was used and more roads would need to be closed to meet the LRMP standard in that Geographic Unit (Appendix B Tables).

Alternative 2

Alternative 2 addresses the wildlife issue by emphasizing spring habitat security, and the recreation issue by allowing for an increase in the ORD standard in the summer season. Alternative 2 applies an ORD standard as follows in all MS-1 habitat and 36 percent of the MS-2 habitat:

USE SEASON		ORD STANDARD
Spring	(4/1 - 6/30)	0.8 mi/mi²
Summer	(7/1 - 8/31)	1.5 mi/mi²
Fall & Hunting	(9/1 - 11/30)	1.0 mi/mi²

A ORD standard of 2 mi/mi² is applied to only the following BMA's within MS-2 areas during the period April 1 to November 30:

- Swan Lake District (Crane Mountain area):

  BMA's NMSR A1, A2, A3, A4, A5, A6.

- Glacier View District (Teakettle Mountain area):

  BMA's LNFF A11, A12, A13.

- Hungry Horse District (Lion Lake and Lake Five areas):

  BMA's HGHS B1, B4.

These BMA's constitute 71,600 (64 percent) of the total 111,400 acres of MS-2 designated acres (LRMP II-27). The MS-2 BMA's listed are those with lower habitat value for grizzly bear based on the following criteria:

1. The BMA contains no MS-1.
2. Habitat was clearly of low value.
3. The BMA was in close proximity to highly developed areas.

Alternative 6 (Preferred Alternative)

Alternative 6 addresses the wildlife issue by increasing habitat security in the summer, but decreases recreation access during the same period.

Alternative 6 applies the standard of 1 mi/mi² in MS-1 habitat during the period April 1 to November 30. Thirty six percent of the MS-2 area will have an ORD standard of 1 mi/mi².

A ORD standard of 2 mi/mi² is applied to only the following BMA's within MS-2 designated habitat during the period April 1 to November 30:

- Swan Lake District (Crane Mountain area):

  BMA's NMSR A1, A2, A3, A4, A5, A6.

- Glacier View District (Teakettle Mountain area):

BMA's LNFF A11, A12, A13.

- Hungry Horse District (Lion Lake and Lake Five areas):

BMA's HGHS B1, B4.

These BMA's constitute 71,600 (64 percent) of the total 111,400 acres of MS-2 designated acres (LRMP II-27). The MS-2 BMA's listed are those with lower habitat value for grizzly bear based on the following criteria:

1. The BMA contains no MS-1.
2. Habitat was clearly of low value.
3. The BMA was in close proximity to highly developed areas.

Alternative 8

Alternative 8 addresses the wildlife issue by providing the same habitat security in all MS-2 areas as MS-1 with an ORD standard of 1 mi/mi^2, during the period April 1 to November 30. The recreation access is the most restricted of all the alternatives.

Alternative 8 applies a standard of 1 mi/mi^2 in MS-1 and MS-2 during the period April 1 to November 30.

Existing Situation

The "existing situation" reflects the LRMP implementation level as of January 1990. The on-the-ground road management is not the "no action" alternative. The "existing situation" has been used as the reference datum to compare alternatives as displayed in Appendix Tables and Figures. The existing situation for each District is reflected on the attached maps and in Appendix B Tables and Figures.

3. Comparison of Alternatives

a. Introduction

The alternatives have been compared relative to their affects on the two environmental issues relevant to this proposal. This comparison deals with the effects on motorized access-dependent recreation, grizzly bear habitat, and elk habitat. The basis of calculating effects is the change in unrestricted miles by alternative shown in Table II-1 (for District breakdown, see Appendix B Tables and Figures).

b. Comparison of Alternatives by Issue

Issue: The effect of road restrictions on public access for recreation.

Comparison of alternatives for recreation is based on the assumption that the more miles of road available to the recreating public during their normal use period, the greater the opportunity to accommodate the dispersed recreational user. This assumption may not be correct for certain types of users such as hunters or hikers seeking a non-motorized recreation experience; but they too may be affected by lack of access to non-roaded areas because of road restrictions. Although there may be greater or lesser effects on the recreational user from site-specific restrictions. The amount of roads available provides an index to measure impact to recreation users from a programmatic standpoint.

Table II-1 shows the miles open to public motorized use for each alternative. Alternative 1 reflects more miles of open road than the other alternatives in four of the five use seasons. Alternative 2 exceeds the open road miles of all alternatives, including Alternative 1, during the summer season. Alternative 6 is second to Alternative 1 in respect to the number of open miles available in four out of five use seasons. Alternative 8 is the most restrictive in three out of five use seasons.

Table II-2 shows the relative impact on the various types of recreational users as a percent of mile-days lost or gained from the existing situation on a Forest-wide basis. Mile-days is the product of days available times the number of miles available for District breakdown, see Appendix C Tables and Figures. This more accurately represents the affects of the alternative than Appendix B Tables and Figures. The lower the percent reduction in mile-days, the better the opportunity to accommodate recreational users.

Alternative 1 has the least reduction of mile-days for five of the six user groups. The exception is the berry picker, which is equal to the 7 percent reduction in Alternatives 1 and 2. Alternative 2 is second to Alternative 1 by having equal or less impact than Alternatives 6 and 8 for five out of six user groups. Alternative 6 is third in comparison of recreational user impacts, while Alternative 8 is last. Alternative 1 best meets the criteria from a recreational use availability standpoint. Alternative 2 provides more open road miles during the peak summer months, Alternative 2 appears to be the best recreational alternative from a Forest-wide standpoint.

TABLE II-3 - NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON NATIONAL FOREST SYSTEM LAND

Season of Use	Existing Situation (Miles)	Alt 1	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	1513	1498 (-15)	1267 (-246)	1340 (-173)	1282 (-231)
Late Spring (LS) 5/15 - 6/30	1577	1553 (-24)	1356 (-221)	1416 (-161)	1360 (-217)
Summer (SU) 7/1 - 8/31	2055	1862 (-193)	1950 (-105)	1763 (-292)	1692 (-363)
Fall (FA) 9/1 - 10/14	1744	1632 (-112)	1463 (-281)	1475 (-269)	1410 (-334)
Hunting (HU) 10/15 - 11/30	1578	1520 (-58)	1413 (-165)	1416 (-162)	1360 (-218)

(Value in Parenthesis is the Change from Existing Situation)

TABLE II-4 - EFFECTS TO PUBLIC MOTORIZED USE

		Percent Change Relative to the Existing Situation			
User Type	Existing Situation (1000 Mile-days)	Alt 1	Alt 2	Alt 6	Alt 8
Spring Br Hunter (SBH)	46	-1%	-2%	-2%	-2%
Recreation Drvr (RD)	362	-5%	-11%	-13%	-16%
Fisherman (F)	277	-6%	-10%	-13%	-17%
Woodcutter (WC)	362	-5%	-11%	-13%	-16%
Berry Picker (BP)	121	-7%	-7%	-15%	-18%
Fall Hunter (FH)	139	-1%	-14%	-13%	-17%

Issue: The impact of open roads on endangered species and other wildlife.

Affects of road management alternatives upon the wildlife resource was evaluated by estimating effects on grizzly bear and elk. These species collectively occur throughout the Forest and are sensitive to roads and road use. Road effects were evaluated for elk using the impact curve developed by Lyon (1983), and followed general methods outlined in "Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho," (Leege, 1984). Impact coefficients and road use levels were modified by Flathead National Forest and Montana Department of Fish, Wildlife and Parks biologists to better fit local conditions. The analysis "method" for elk was modified and used to estimate effects to the grizzly bear. Impact coefficient values, zones of influence, and impact classes for grizzly bear were derived from "Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem," (1987). The numbers displayed in Appendix D Tables and Figures D-1 to D-7, Appendix E Tables and Figures E-1 to E-7, and Appendix F Tables and Figures F-1 to F-7 are calculated Residual Impact Values that approximate available space for each of the species; the lower the number the greater the impact.

Calculated impacts from open and restricted roads varied seasonally with greater impacts associated with higher estimated levels of human use. Impacts tended to increase from early spring through summer and fall, as human use increased. The relationship of human use levels and impact coefficients used are displayed in Appendix H. A Residual Impact Value of 10.0 indicates that habitat and mortality risk are unaffected by roads, while a Residual Impact Value of 1.0 indicates that mortality risk is potentially high and habitats are unavailable or very difficult to use.

All action alternatives improved conditions for both grizzly bear and elk when compared to the existing situation (Appendix D Table D-7 and Appendix F Table F-7). The difference between Alternatives 1, 2, 6, and 8 was 0 to 3 percent on a Forest-wide basis. Alternatives 1 and 2 had lower calculated Residual Impact Values during summer, and Alternatives 2, 6, and 8 had similar and higher calculated values during the spring and fall for both grizzly bear and elk. The yearly average difference between alternatives was less than 1 percent for elk and less than 3 percent for grizzly bear. The relationship between alternatives was the same for each of the Ranger Districts compared to the Forest totals; but calculated values were different between Districts. Impacts to grizzly bear were 10 to 15 percent greater on Swan Lake and Hungry Horse districts, respectively, than generally occurred on the Glacier View and Spotted Bear districts. Impacts to elk were 10 to 15 percent greater on Hungry Horse, Tally Lake, and Swan Lake (Island Unit) districts, and 5 percent greater on the Swan Lake District (Swan Unit) than on the Glacier View and Spotted Bear districts. Differences between Districts were due to considerably increased ORD on the Tally Lake and Swan Lake (Island Unit) districts, and minor increases in ORD and generally higher use levels for open roads on the Hungry Horse and Swan Lake (Swan Unit) districts, compared to the Glacier View and Spotted Bear districts.

The comparison between alternatives having similar analysis areas and using the same road and ownership base (Alternatives 2, 6, and 8), yields consistent information. The comparison with Alternative 1 does not. The distribution of effects in Alternative 1 may not be on the same scale as Alternatives 2, 6, and 8, but is unknown. The Residual Impact Values assume that industrial forest and State of Montana lands are managed to meet the stated ORD. This is true for Alternatives 2, 6, and 8 (Road Management Memorandum of Understanding, April 18, 1989, see project files), but Alternative 1 does not have arrangements for road management on other ownerships. The displayed Residual Impact Values for Alternative 1 impacts on other general forest ownerships in the Swan

Valley and the North Fork may be different if ORD varies from the LRMP standard. The level of impact difference would be proportional to the difference in road management levels and the amount of other ownership land involved. It is assumed that differences would be slight for State of Montana lands, since they have a 1 mi/mi^2 standard in grizzly bear habitat (reference State of Montana Grizzly Bear Guidelines). Since there is no open road standard for industrial forest lands, and most roads are often open, overall impacts could be considerably greater than displayed in areas with mixed industrial forest and National Forest System ownership (the Swan Valley).

CHAPTER III

AFFECTED ENVIRONMENT

CHAPTER III - AFFECTED ENVIRONMENT

A. INTRODUCTION

This chapter describes the existing condition of the environment that may be affected by the alternatives. The discussion in this chapter will correct and/or add new information to the description of the affected environment contained in the LRMP FEIS.

B. FOREST-WIDE GOALS, OBJECTIVES, AND STANDARDS RELEVANT TO PROPOSED ACTION

Travel management direction, including the ORD standards, is found in the LRMP. The LRMP provides Forest-wide goals, objectives, and standards, as well as more specific direction for Forest Geographic Units. The following discussion highlights the existing LRMP direction relevant to this proposal.

The LRMP resource goals for recreation (LRMP II-5) state:

> "*Provide a range of quality outdoor recreation opportunities within a Forest environment that can be developed for visitor use and satisfaction.*"
>
> "*Provide a range of quality recreation opportunities, including motorized and non-motorized, in an undeveloped forest environment.*"

The applicable LRMP standards for recreation (LRMP II-16) are:

> "*2. Encourage Forest visitors not desiring a wilderness setting to use nonwilderness National Forest System lands which can provide for their recreation needs.*"
>
> "*10. As per Executive Order 11644, through the Flathead National Forest Travel Planning Direction (Appendix C), and in conformance with the ROS designations for specific areas, designate use restrictions on roads, trails, and specified areas along with designated areas for ORV (Off-road Vehicle) use.*"

Forest-wide objectives are found on LRMP II-5. This direction states:

> "*5. Develop and implement a road management program, with road use restrictions and closures, that is responsive to resource protection needs and public concerns.*"

Standards relative to ORD appear on LRMP II-29 (Standard 12) and Table II-6 on II-55. They state:

> "*(12) Road management will be conducted to assist in meeting grizzly bear habitat management goals. When warranted, roads will be closed seasonally or yearlong, and where appropriate, area closures will be applied. Transportation plans and Forest visitor plans as well as individual project road systems will be evaluated regarding their impacts on habitat effectiveness.*"

The 1986 Interagency Grizzly Bear Management Guidelines indicate:

> "*seasonal closures if data shows grizzlies use of the area to be seasonal*"

Standards relative to ORD appear on LRMP II-30 (Standard 16) and Table II-6 on II-55. They state:

> "*(16) Within Management Situations 1 and 2, provide security areas immediately adjacent to the influence zone of the project area. Decide on a site-by-site basis. Security areas should be 5,000 acres or larger in areas that are roadless or where the open road density averages 1 mile/square mile or less over the area during the bear use period.*"

LRMP II-54 directs users to other sections which provide direction on road management as follows:

> "*5. The intent of the road management program will be to provide the greatest possible level of public access commensurate with promoting public safety, protecting resources, and minimizing user conflicts. Comprehensive reviews of proposed restrictions will ensure that no more are imposed than necessary, and that a balanced approach in managing motorized vehicles is achieved.*
>
> *To assure wildlife security needs within the different Geographic Units, unrestricted road density requirements have been established (refer to Table II-6).*
>
> *The intent of the Forest Travel Planning Direction (Appendix C) is that Flathead National Forest roads are open to motorized use unless designated closed or restricted. This direction uses four categories of closures or restrictions along with reasons for the restrictions and the criteria used. The Forest Visitor Map will be reviewed periodically and updated as necessary.*"

Forest Travel Planning Direction as given on LRMP Appendix C states:

> "*A. Provide the greatest possible level of public access commensurate with promoting public safety, protecting resources, and minimizing user conflicts. By means of a comprehensive review of proposed restriction against defensible criteria, ensure that no more restrictions are imposed than are necessary, and that a balanced approach in managing motorized vehicles is achieved*".

LRMP Chapter III contains road management direction specific to management areas in a "Facilities" section. Most management areas have generic direction, such as road closures considered necessary to ensure wildlife security, meet recreation use objectives, and provide resource protection will be implemented. Some management areas have specific road management requirements needed to meet the goals. Special road management direction is given for MA-9 (LRMP III-37), MA-11 (LRMP III-48 to 49), and MA-13 (LRMP III-64).

LRMP Chapter IV contains a summary of road management for each Geographic Unit (LRMP IV-7, 13, 19, 24, 29, 35, 41, 45, 49, 54, 58, 65, 69, 73, 79, 83, 87, 91, 97, 101, 107, 111, 115, 119, 125, 131, 137, 142, 145, and 151).

Finally, the LRMP has direction for making site-specific travel management decisions Forest Travel Planning Direction (Appendix C).

The LRMP incorporated specific land use designations for grizzly bear habitat emphasis in addition to standards and guidelines (LRMP II-23 to 33; III-42 to 50; IV-5 to 9, 44 to 47, 148 to 153). Analysis of alternatives and effects on the environment, economic and social situation was disclosed and discussed in the accompanying LRMP FEIS approved January 22, 1986 (LRMP FEIS I-7 and 15; II-4, 15, 16, 29, 30, 34, 37, 41, 44, 46, 50, 51, 53, 54, 55, 59 to 61, 64, 65, 72, 89 to 93, 106, 109, 110, 145, 159, 161, 167, 170, 172 to 174, 177 to 179, 182, 184 to 186, 188, 191, 193 to 198, 200 to 210; III-14, 15, 17 to 19, 22, 24, 26, 27, and 33; IV-7, 8, 17, 20, 21, 30 to 34, 36, 42, 46, 58, 61, 68, 82, 89, 92, and 98).

Consultation with the U.S. Fish and Wildlife Service, as required by the Endangered Species Act, was an integral part of the LRMP process (LRMP FEIS Appendix A-2, A-5 to 6, A-10, and A-23 to 26). As a result of the consultation process, the U.S. Fish and Wildlife Service provided a May 15, 1985, biological opinion on the Proposed Forest Plan and DEIS (LRMP FEIS VI-29 to 36). Forest-wide standards and guidelines for management of species listed under provisions of the Endangered Species Act (grizzly bear, gray wolf, bald eagle, and peregrine falcon) were incorporated into the LRMP. The U.S. Fish and Wildlife Service provided specific recommendations relative to road management (LRMP FEIS VI-32):

> *"Grizzly bear habitat management goals will eventually be established for each bear management unit now being identified through development of the cumulative effects analysis (CEA) model and will be expressed as a percent habitat effectiveness needed to recover the grizzly. The CEA model will help identify an open road density that is compatible with the bear management objectives. However, until the CEA model is operational, we recommend that in the interim an open road density of 1 mile per square mile of habitat or less be maintained in MS1 and approximately 2 miles per square mile of habitat or less be maintained in MS2. The projected road densities in the Forest Plan clearly indicate that a substantial road closure program will be required to meet grizzly management objectives."*

The ORD guidelines were incorporated into the final LRMP by providing standards for road management by Geographic Unit (LRMP II-54 and 55). ORD was used as an index of security from motorized traffic to compare the effects of alternatives in the LRMP FEIS (IV-120 to 124). The cumulative effect of road management standards by Geographic Unit in the LRMP is disclosed and discussed as Alternative 17 in the LRMP FEIS Chapter IV. The U.S. Fish and Wildlife Service confirmed that the changes between the Proposed Forest Plan (Alternative 11) and the final LRMP (Alternative 17) would not jeopardize the recovery of any species listed as threatened or endangered (LRMP Record of Decision page 12).

The LRMP specified average ORD standards for Geographic Units in the Forest-wide grizzly bear and facilities standards. The facilities standard for ORD (LRMP Table II-6 on II-55) displayed all Geographic Units which are designated grizzly bear area (MS-1 and MS-2) by using a footnote denoted with an asterisk to refer the reader back to grizzly bear Standard 16 on LRMP II-30. Standard 16 provided for grizzly bear security within MS-1 and MS-2 by specifying "... security areas of 5,000 acres or larger in areas that are roadless or where the open road density averages 1 mi/mi^2 or less over the area during the bear use period." This caused confusion in that standard 16 appears to be addressing mitigation measures for projects and not general road management direction. The Chief's appeal decision on is that the U.S. Fish and Wildlife Service recommendation in their biological opinion should be clearly included in the LRMP through an amendment. The Proposed Action is to amend all appropriate sections of the LRMP needed to provide clear direction for managing motorized use of roads to ensure LRMP objectives, including recovery of grizzly bear.

The U.S. Fish and Wildlife Service amended their biological opinion for the LRMP on July 18, 1989. They provided further clarification for many issues relative to National Forest management and reaffirmed the road management need. The following is excerpted from that opinion, page 24.

> *"Using the scientific literature, standards and guidelines were developed (Appendix C) to coordinate Forest activities with the biological needs of the grizzly bear. The guidelines were specifically developed to minimize and/or eliminate: (1) increase mortality risk, (2) loss of habitat, and (3) additive effects. While the Forest Plan projects an annual harvest of 100 MMBF on 66,000 acres over the first decade and 500 miles of roads constructed in association with the timber harvest, these outputs may not be achieved due to the constants of the grizzly bear standards and guidelines (reference Appendix E). Even though 500 miles of road may be built to remove timber, the number of miles of roads open to public travel will be restricted to meet the open road density standards for grizzly bear management situations I and II ≤1 mile/square mile in MS-I and ≤2 miles/square mile in MS-II. Roads will be closed using physical barriers such as kelly bumps, boulders, slash, gates, etc and monitored to determine the effectiveness of the closures. A road is considered closed when it is not reasonably driveable by a conventional vehicle due to natural obstructions or when a physical or enforceable administrative restriction or both is employed and managed such that motorized vehicle use level does not exceed 5 vehicles per week during the restriction period. When administrative activities or a project, such as a timber sale, significantly changes the objectives of the open road density, a site-specific analysis of travel impacts will be made and appropriate mitigating measures established. The open road densities will be calculated as the Forest Plan is implemented on an analysis area of 5,000 to 15,000 acres so that the true impacts from roads are not "masked" or "washed out" as could happen if the densities were calculated using larger size analysis areas."*

This quote identifies many of the variables that require definition and inclusion into the road management standard for grizzly bear.

C. SPECIFIC RESOURCES

1. Recreation

When the LRMP was completed in 1986, recreation potential, existing use, projected demand, and Resource Planning Act (RPA) objectives were estimated for the planning decade (1986 to 1995). These estimates, shown in LRMP VI-3 Table VI-1, did not indicate a maximum production benchmark (capacity) for dispersed recreation, which is the recreation resource most affected by road restrictions. The projected levels of recreation use were developed on a Regional basis for use by forests in preparation of forest plans, utilizing a simple linear regression model based on Western Montana population trends and past reported recreation use (LRMP VI-3).

In 1980, the actual Recreation Visitor Day (RVD) use for the non-wilderness dispersed recreation on the Forest was 500,500 RVDs. Of this amount, approximately 77 percent (385,385 RVDs) was estimated to occur in roaded dispersed recreation areas. This same 77 percent roaded use projection was used for the remainder of the planning decades. (Reference Analysis of the Management Situation, 1982.)

TABLE III-1 - NON-WILDERNESS DISPERSED RECREATION VISITOR DAY PROJECTIONS

Actual	LRMP	RPA
(1980) 500,500 RVDs (1989) 366,900 RVDs	(1985) 568,100 RVDs (1995) 757,000 RVDs	(1980) 597,333 RVDs (1990) 647,000 RVDs

Since 1986, monitoring of the LRMP has shown that reported dispersed recreation use has only equaled from 48 to 65 percent of the 1985 projection of 568,000 RVDs. The 1989 use level was 366,900 RVDs in dispersed recreation areas.

In 1980, there were approximately 3,146 miles of road on the Forest. At that time, it was estimated that the arterial road system was 100 percent complete, the collector road system was approximately 95 percent complete, and the local roads approximately 40 percent complete. Based on the 1980 estimate, approximately 3,455 miles of additional road would be needed to complete the road system. The adoption of the LRMP reduced the need for new road construction by over 1,000 miles to approximately 2,441 miles (LRMP VI-23 to 24).

The LRMP projects full road development to be accomplished by the fifth decade (50 years) after LRMP implementation. The total miles of road projected at full development would be 5,917 miles, of which 2,000 miles are scheduled to be open yearlong. The remaining miles of road will be restricted either yearlong or seasonally, with a maximum open road situation occurring during the summer months with approximately 2,500 miles open (LRMP FEIS IV-122).

Since the 1987 Travel Map, the Forest is continuing to implement road restrictions towards full implementation of the LRMP ORD standards. As of January 1990, there were approximately 3,456 miles of existing road on National Forest System lands within the Flathead National Forest, of which 1,512 miles are open to the public during the early spring season and 2,055 miles are open during the summer season (reference Figure II-1).

Dispersed recreation is dependent on road access. This includes access to destination points serving non-roaded areas. Recreational users identified as being most dependent on roaded recreational areas are woodcutters, berry pickers, fishermen, hunters, and those who drive for pleasure. Those dependent on road access to reach the non-roaded dispersed recreation areas are backpackers, hikers, hunters, fisherman, etc. All are represented in the Forest Recreation Information Management Report.

2. Wildlife

a. Threatened and Endangered Species

The LRMP FEIS estimated the existing population of grizzly bear on the Flathead National Forest to be between 150 and 180 (LRMP FEIS III-27).

In 1986, the Montana Department of Fish, Wildlife, and Parks issued the "Final Programmatic Environmental Impact Statement on the Grizzly Bear in Northwestern Montana," which estimated 549 to 813 grizzly bear exist in the U.S. portion of the Northern Continental Divide Ecosystem (NCDE). This information was cited by the U.S. Fish and Wildlife Service amended July 18, 1989, biological opinion on the LRMP as the best source of current estimates of grizzly bear numbers in the NCDE. The current estimated population of 193 to 294 grizzly bear on the Flathead National Forest is the sum of the

Montana Department of Fish, Wildlife, and Parks estimates for the Red Meadow (100 percent), Southern Whitefish Range (60 percent), South Fork (100 percent), Swan Front (70 percent), Mission Mountains (60 percent), and Scapegoat (30 percent) density units (reference Montana Department of Fish, Wildlife, and Parks Final Programmatic EIS on the Grizzly Bear in Northwest Montana, 1986, 41 to 50 and 227 to 233).

One research need cited in the LRMP was for validation of population levels and trends for grizzly bear (LRMP II-12). In 1988, an intensive monitoring study was implemented in the South Fork area on the west side of Hungry Horse Reservoir. Preliminary results of this study (Mace and Manley, 1990) were used to estimate existing grizzly bear densities of approximately 1 bear per 62 square miles in the northern 48 square miles (13 percent of the study area), and 1 bear per 16 square miles in the southern 321 square miles (87 percent of the study area). This is similar to grizzly bear densities at the lower estimate reported in the Montana Department of Fish, Wildlife, and Parks 1986 FEIS for the South Fork Density Unit, and is similar to estimates used to formulate grizzly bear density coefficients for comparing the effects of LRMP land use prescriptions for that area (15.74 square mile/bear, LRMP FEIS II-89 and Appendix B-45).

The original Grizzly Bear Recovery Plan (1982) displayed an extensive list of population and mortality parameters for the NCDE grizzly bear population that must be met before recovery could be considered achieved. Population information is available, as indicated by the Montana Department of Fish, Wildlife, and Parks 1986 FEIS for various study areas across the NCDE, using variable methodologies at different points in time. The individual study area data were extrapolated to the total NCDE, in order to estimate the ecosystem population of grizzly bear. There was not agreement between members of the Interagency Grizzly Bear Committee (IGBC) upon interpretation of the data in relation to determining grizzly bear recovery.

This process does not represent a repeatable monitoring scenario. During 1986 to 1990, the IGBC Managers Subcommittee for the NCDE worked toward developing a monitoring program that would generate data upon which to base a recovery determination.

The IGBC NCDE Managers Subcommittee developed data requirements and implemented a monitoring process to determine population status in relation to recovery needs. The data requirements and rationale are presented in a "Draft Conservation Strategy for the Grizzly Bear Northern Continental Divide Ecosystem, Montana" (IGBC, 1989). The major difference between the proposed criteria and the 1982 recovery plan population statistics is the emphasis upon monitoring and using family groups as an index to population distribution and numerical adequacy. The recovery targets include the following:

- The unduplicated number of females with cubs (of the year) seen annually, must equal or exceed, as a running 3-year annual average, 12 females with cubs outside Glacier National Park and 10 inside.

- The distribution of females with young throughout the ecosystem (young can be cub, yearlings, or 2-year olds). Twenty-four BMUs have been identified in the NCDE. A female with young must be observed within 20 of the 24 BMUs on a cumulative 3-year basis.

- The annual number of known human-caused mortalities. No more than 14 total, of which not more than 6 can be females.

These data are available for 1987 to 1989, and items 1 and 3 are summarized in Table III-2. For item 2, over the 3-year period, females with young were observed in 21 out of 24 BMUs (Montana Department of Fish, Wildlife, and Parks records, 1989; and IGBC NCDE Managers Subcommittee meeting notes, March 1990). All recovery targets were met for the 1987 to 1989 period.

TABLE III-2 - RECOVERY STRATEGY MONITORING, 1987 to 1989

	Females/Cubs Unduplicated		Known Human-Caused Mortality	
Year	Outside GNP	Inside GNP	Total	Females
1987	14	13	9	6
1988	12	13	8	6
1989	19	16	12	5

In his August 31, 1988, decision on LRMP appeals #1467 and 1513, the Chief directed the Regional Forester to ensure that adequate habitat is provided to meet the Flathead National Forest's grizzly bear recovery goal. The data discussed above suggests that the LRMP estimates were generally correct and that the Forest is currently providing habitat to help support a recovered grizzly bear population and further that monitoring data for the 1987 to 1989 period indicate that the NCDE was meeting population criteria for a recovered grizzly bear population (Draft Conservation Strategy for the Grizzly Bear Northern Continental Divide Ecosystems, Montana, IGBC 1989).

The NCDE grizzly bear population tends to use habitats that are elevationally distributed (Servheen, 1983; Aune, 1989; Mace per comm, 1990; McLellan and Shackleton, 1988). These studies represent grizzly bear from all portions of the NCDE, with the exception of the central southern area. Annual habitat use patterns have resulted in reasonable predictability of the elevational distribution of grizzly bear within seasons.

Aune (1989) reported that grizzly bear on the Rocky Mountain East Front (sample size = 61) displayed elevational migration patterns. Most grizzly bear used high elevation for denning and lower elevations during spring. About 70 percent of the population used higher elevations (>5,500 feet) during summer and fall, while the other 30 percent remained at lower elevations (<4,500 feet) during these seasons. The tendency to not use lower elevations during summer appeared to correlate with human influences. The areas both north and south of the East Front Core Study Area had greater cattle and/or human use, and summer low-land use patterns by grizzly bear was less frequent than in the core study area (Aune per comm, 1990).

Servheen (1983) reported grizzly bear use for the southern Mission Mountains. Grizzly bear (sample size = 3) displayed elevational migration use patterns, with all grizzly bear using lower elevations (<5,000 feet) during spring and fall; and 67 percent (sample size = 2) using high elevations (>5,500 feet) during summer. One grizzly bear used elevations <5,000 feet during summer.

Bruce McLellan (per Comm 1989) indicated grizzly bear use (sample size = 53) primarily for the Canadian portion of the North Fork of the Flathead River area. He indicated that grizzly bear in the area display two different scenarios in relation to elevational use patterns. One group displayed "typical" seasonal elevational migration patterns (lower elevation in spring and higher elevation in summer and fall), while a smaller, but substantial, portion of the population made very limited use of areas <5,500 feet during any season.

The Montana Department of Fish, Wildlife, and Parks has been studying grizzly bear in the South Fork of the Flathead River, with 21 bears providing elevational information (Mace unpublished data, 1990). These data indicate general use of both low and high elevations during spring, and increased use of higher elevations during summer and fall. Habitats >5,000 feet in elevation were used by 75 percent of the population during summer and by 70 percent of the population during fall nearly 90 percent of the time. During both summer and fall, 25 percent of the population used high and low elevations (above and below 5,000 feet) about equally. These data suggest that most grizzly bear in this area display elevational migration patterns with less use of lower elevation areas, especially during fall, than reported by Servheen (1983) or Aune (1989).

These studies indicate that grizzly bear generally use lower elevations during the spring, higher elevations during summer, and have more variation in elevational use patterns during fall. Also, the information outlines various patterns of elevational use by different segments of the population. During summer, approximately 70 to 75 percent of the population used high elevation areas. Approximately 25 to 30 percent of the population used lower areas during summer on the Rocky Mountain East Front and in the South Missions. A substantial segment of North Fork grizzly bear used high elevations during all seasons.

b. Big Game

The LRMP and LRMP FEIS outlined the desire and projected realization for increased populations of big game (LRMP II-5 and LRMP FEIS II-124). Elk are an important big game species that is well distributed on the Forest. Flathead National Forest and Montana Department of Fish, Wildlife, and Parks biologists outlined the current spring-fall areas on the Forest where elk are distributed and appear appropriate for management (Appendix H). The summer elk distribution on the Forest is based upon the biologist group's opinion and has limited numerical data as its base. A population estimate of 1,820 elk was made for the roaded portion of the Forest using Montana Department of Fish, Wildlife, and Parks harvest statistics for the 1978 to 1985 period (Flathead National Forest Fiscal Year 1988 Annual Monitoring Report, 1989).

3. Other Resources

The effect of road management on air quality, soils, water, vegetation, fire protection, and cultural resources was addressed in the LRMP FEIS (IV-120 to 123). Alternative 1 of this proposal is a reflection of the LRMP with respect to road management, which includes application of ORD standards. When considering the resources listed above, the differences in effects between alternatives for this proposal are too small to be meaningfully calculated.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

CHAPTER IV - ENVIRONMENTAL CONSEQUENCES

A. INTRODUCTION

This chapter discloses the environmental consequences of implementing the alternatives. The Chapter III description of the existing condition of the environment provides the baseline for describing consequences. A comparison of alternatives is presented in Chapter II.

This chapter discloses the effects of the alternatives using the same criteria used in the LRMP FEIS, i.e. total miles of road open for public use yearlong and seasonally, and the cumulative maximum ORD during the summer season.

Alternatives will affect the miles of road available for motorized use by the public, but none of the alternatives will affect the total miles of road projected to be constructed to implement the LRMP. Appendix B Tables and Figures show the miles of road that would be available in the non-wilderness portion of the Forest.

B. EFFECTS COMMON TO ALL ACTION ALTERNATIVES

The effects stated in the LRMP EIS IV-120 to 123 remains an accurate disclosure of the effects of road management except as those effects are changed or added to by analysis and disclosure in this proposal.

1. Visual Quality and Cultural Resources

Alternative ORD standards for road management will have no effect on visual quality and cultural resources.

2. Water Quality, Soil, and Vegetation

Each alternative regarding standards for road management in grizzly bear habitat would have slight effects on the environment. Alternatives which result in a high degree of restrictions on motorized use of roads, would result in a minor reduction of sediment delivery to streams from use of roads during wet conditions. At the programmatic level, the differences between action alternatives cannot be accurately assessed.

3. Wildlife

Effects on wildlife habitat from motorized use on trails was not considered in the analysis. Such use occurs at low, sporadic levels on the Forest, and would have little influence on the Residual Impact Values. The monitoring plan will include motorized use on trails.

4. Social and Economic

Each alternative regarding standards for road management in grizzly bear habitat will have effects on the level of public access to the Forest. The intended level of access in the LRMP FEIS discussion of road management and the social and economic effects of public access restrictions (LRMP FEIS IV-123), still applies and is adequately presented.

5. Mineral and Timber Activities

Each alternative regarding standards for road management in grizzly bear habitat would have little effect on mineral and timber activities or resources. Alternative ORD road standards would not affect timber outputs.

6. Fire Protection

Additional road restrictions have the potential of impacting fire protection efforts. In general, decreases in access can result in larger fires due to delays in getting firefighters to the site. Any alternative's actual impact at the programmatic level cannot be accurately assessed until the site-specific implementation decisions occur. If a gate or sign is used as the restrictive device, there would be minimal impact to administrative activity such as fire protection. If a permanent device such as a berm is used, there could be a delay in response time of fire personnel resulting in larger, more costly fires.

C. DIRECT AND INDIRECT EFFECTS OF ALTERNATIVES 1, 2, 6, and 8

1. Recreation

The LRMP FEIS (IV-33) stated that road access restrictions were having the potential for reducing the recreational carrying capacity of the Forest. Dispersed recreation use has only equaled from 48 to 65 percent of the 1985 projection of 568,000 RVDs (Fiscal Year 1989 Flathead National Forest Monitoring Plan). As stated in the Analysis of the Management Situation (1982), "Opportunities to provide roaded dispersed recreation abound, and we anticipate no problem in meeting projected 'demand'" (see Table III-1). Additional restrictions will incrementally reduce the opportunity of choice for dispersion.

Those recreation users most dependent on motorized access were stratified into the following user types and key use periods:

USER GROUPS	KEY USE PERIOD
Spring Bear Hunter	April 15 - May 31
Recreation Driver	April 1 - November 30
Fisherman	May 15 - October 14
Woodcutter	April 1 - November 30
Berry Picker	July 15 - September 14
Fall Hunter	September 1 - November 30
Snowmobiler	November 15 - May 15

Impact to the snowmobiler user type was not included in the calculation process. The majority of the snowmobiler key use period is generally outside the dates the access restrictions apply to. Impacts to the snowmobiler user type will be handled on a site-specific basis.

The impact to each user type, except snowmobilers, was calculated by multiplying the open road miles lost or gained times the number of days available in their use period shown above.

> **Example:** Assuming 250 miles open to berry pickers for a public motorized 60-day use period (July 15 to September 14), the existing situation potential to the berry picker is:

(250 miles) x (60 days) = 15,000 mile-days use potential

An alternative which restricts 75 miles more than the existing situation during the period July 15 to September 14. The impact to the berry picker would be:

(-75 miles) x (60 days) = -4,500 mile-days use potential lost

-4,500 mile-days/15,000 mile-days x 100 = -30% use potential lost

Each alternative was compared to the existing situation as shown in Tables IV-1 and IV-2. A breakdown by District is shown in Appendix B and C Tables.

TABLE IV-1 - NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON NATIONAL FOREST SYSTEM LAND

Season of Use	Existing Situation (miles)	Alt 1	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	1513	1498 (-15)	1267 (-246)	1340 (-173)	1282 (-231)
Late Spring (LS) 5/15 - 6/30	1577	1553 (-24)	1356 (-221)	1416 (-161)	1360 (-217)
Summer (SU) 7/1 - 8/31	2055	1862 (-193)	1950 (-105)	1763 (-292)	1692 (-363)
Fall (FA) 9/1 - 10/14	1744	1632 (-112)	1463 (-281)	1475 (-269)	1410 (-334)
Hunting (HU) 10/15 - 11/30	1578	1520 (-58)	1413 (-165)	1416 (-162)	1360 (-218)

(Value in Parenthesis is the Change from Existing)

TABLE IV-2 - EFFECTS TO PUBLIC MOTORIZED USE

		Percent Change Relative to the Existing Situation			
User Type	Existing Situation (1000 mile-days)	Alt 1	Alt 2	Alt 6	Alt 8
Spring Br Hunter (SBH)	46	-1%	-2%	-2%	-2%
Recreation Drvr (RD)	362	-5%	-11%	-13%	-16%
Fisherman (F)	277	-6%	-10%	-13%	-17%
Woodcutter (WC)	362	-5%	-11%	-13%	-16%
Berry Picker (BP)	121	-7%	-7%	-15%	-18%
Fall Hunter (FH)	139	-1%	-14%	-13%	-17%

Alternative 1

The existing LRMP direction (the "no action" alternative) has the least reduction in open road miles in all seasons, except for the summer period. On a Forest-wide basis, reductions from the existing situation range from 14 miles during the early spring season to a maximum reduction of 172 miles during the summer season. Open road miles for the spring season are 1,498, while the summer season is 1,882.

Forest-wide effects on the recreational user groups range from a 1 percent reduction in available mile-days for the spring bear hunter and fall hunter, to a 6 percent reduction in available mile-days from the existing condition for the fisherman, and a 7 percent reduction for the berry picker.

On a District-by-District basis, there is no change from the existing situation for open road miles on Glacier View, Spotted Bear, and Swan Lake (Island Unit) districts. There are no changes on Tally Lake District during the early and late spring seasons. A 15-mile open road reduction occurs on Tally Lake District during the fall and hunting seasons, and an 81-mile reduction occurs during the summer season. The Swan Lake District (Swan Unit) has a 14- to 15-mile reduction during all use seasons. Hungry Horse District has the greatest amount of reduction in open road miles ranging from 0 miles in early spring to 77 miles during the summer and fall seasons.

Alternative 1 District-by-District impacts on the recreational user groups, when compared to the existing situation, are again 0 percent loss in user mile-days on Glacier View, Spotted Bear, and Swan Lake (Island Unit) districts. As would be expected from the review of miles of open road available, Tally Lake District is the next least affected by the road restrictions with no loss in mile-days to the spring bear hunter up to a 10 percent loss (390 mile-days) to the berry picker. The Swan Lake District (Swan Unit) has a range of loss in mile-days from 2 percent to the fall hunter to 5 percent for the woodcutter, berry picker, and recreational driver. Again, Hungry Horse District recreational users are most impacted with a 0 percent reduction for the spring bear hunter to a 22 percent reduction for the berry picker. The recreational driver, woodcutter, and fisherman have mile-days reduction ranging from 13 to 16 percent.

Alternative 2

Alternative 2 is the most restrictive from a Forest-wide standpoint during the early spring period (1,266 miles open), but becomes the most liberal for open road miles during the summer months (1,950 miles open). Reductions from the existing situation range from 105 miles during the summer months to a maximum of 281 miles during the fall season.

The reduction in mile-days to the recreational user groups range from 2 percent for the spring bear hunter, to 14 percent for the fall hunter. The recreational driver, fisherman, and woodcutter may expect a 10 to 11 percent reduction in available mile-days.

Using Appendix B Tables B-1 to B-6 and Appendix C Tables C-1 to C-6, District-by-District comparisons can be made as in Alternative 1 (note Alternatives 2, 6, and 8 were not computed for the Swan Lake (Island Unit) and Tally Lake districts because they did not change due to lack of designated grizzly bear habitat). In summary, Spotted Bear District received the least reduction in open road miles through the range of use seasons, followed by Glacier View, Swan Lake (Swan Unit), and Hungry Horse districts. Swan Lake District (Swan Unit) showed an increase in miles available over the existing situation during the summer season. The reduction in available mile-days by recreational user groups was least on Spotted Bear District, with no impact to the spring bear hunter. Other Districts show a reduction of 25 to 30 percent in mile-days available. The fall hunter is impacted from a 13 percent reduction in mile-days on Glacier View District, to a 32 percent reduction in mile-days on the Hungry Horse District.

Alternative 6

Alternative 6 is more restrictive than the existing situation in all use seasons. It is less restrictive than most of the other alternatives during the spring season, with 1,340 miles of open road. It is more restrictive than most of the other alternatives during the summer use season, with a total of 1,764 miles of open road available. The respective reductions in open road miles from the existing situation range from 162 miles during the fall season to 291 miles during the summer season. Forest-wide, the spring bear hunter receives a 2 percent reduction in available mile-days, while all other recreational groups range from a 13 to 15 percent reduction.

District-by-District summaries indicate that open road mile reductions are fewer on Spotted Bear District, followed by Glacier View, Swan Lake (Swan Unit), and Hungry Horse districts.

On the average, impacts to the respective recreational user groups are less on Glacier View District than on other Districts. The range of reduction on Glacier View District is from 11 percent for the fall hunter to 22 percent for the berry picker. The most impacted users are the fisherman, fall hunter, and berry picker on Hungry Horse District, ranging from a 31 to 35 percent reduction in mile-days. The spring bear hunter on the Swan Lake District (Swan Unit) also received a 33 percent reduction in available mile-days.

Alternative 8

Alternative 8 is the most restrictive alternative during the summer, fall, and hunting season with 1,693 miles, 1,411 miles, and 1,359 miles of open road available respectively. The early and late spring seasons are also quite restrictive. Reductions on available open road miles from the existing situation range from 217 miles in late spring to a maximum of 362 miles during the summer season.

Reductions in available mile-days to the various recreational groups is 2 percent for the spring bear hunter to a range of from 16 to 18 percent for the rest of the recreational user groups.

District-by-District summary highlights are that Spotted Bear District averages about 21 miles reduction between the five seasons, followed by Glacier View, Hungry Horse, and Swan Lake (Swan Unit) (with a 131 mile reduction from the existing situation in all seasons but the fall hunting season) districts.

District-by-District reductions in available mile-days for recreational users translates into a 13 to 20 percent reduction for all user groups for Spotted Bear District, a 13 to 22 percent reduction for Glacier View District, a 25 to 35 percent reduction for Hungry Horse District, and a 38 to 41 percent reduction for Swan Lake District (Swan Unit).

As a result of this Proposed Action, implementation of site-specific road restrictions may create impacts when someone's favorite hunting area, berry patch, wood yard, or fishing hole is no longer accessible by motorized travel. In the absence of site-specific information on road restrictions, Appendix G Table G-1 can be used in conjunction with the BMA maps to identify potential ORD conflicts for the individual recreational user. To determine potential road restrictions, a concerned party can compare existing ORD condition for the specific BMA with the proposed ORD of the alternatives to determine if they may be affected by additional road restrictions.

All action alternatives will reduce, to some degree, the amount of road available to the recreating public. This may not reduce projected RVDs in the Forest Plan, it will restrict, to varying degrees, the areas of choice.

Miles of open road available to the recreational user varies between alternatives by District. The percentage of impact (mile-days lost) per recreational user group also varies between Districts and alternatives. The percentages and miles discussions of the alternatives above are based on the Forest averages of all Districts (reference Appendix B Tables B-1 to B-6 and Appendix C Tables C-1 to C-6).

2. Wildlife

The presence and use of roads tend to affect wildlife species in a number of ways. Road construction can destroy habitats, use of roads by humans can displace wildlife species from preferred habitats, and roads increase human access and encounter potentials (with subsequent risk of mortality). Habitat destruction due to road construction is generally a site-specific issue, while displacement and encounter potential is both programmatic as well as site-specific. This analysis will deal only with programmatic features.

The intent of the LRMP was to manage road use to provide wildlife security in coordination with the U.S. Fish and Wildlife Service recommendations in their 1985 biological opinion and their amended July 1989 biological opinion. This intent is discussed in the wildlife and social and economics text of LRMP FEIS IV-123.

The amount of open road as well as the level of use on roads have effects upon the useability of an area for sensitive wildlife. The ORD standard sets the amount of possible open road within an area, but does not deal with the level of use on roads. In order to analyze the effect of both the amount of road available and the level of use on roads, a Residual Impact Value was calculated.

The Residual Impact Value is an index of habitat suitability that incorporates effects from both road quantity (ORD) and human use. Residual Impact Value indicates the level of displacement and mortality risk expected due to roads and their use. The Residual Impact Value represents a comparison between a particular road management alternative and the same area if no road effects were present. Thus a Residual Impact Value of 10.0 indicates that habitat and mortality risk are unaffected by roads, while a Residual Impact Value of 1.0 indicates that mortality risk is potentially high and habitat is unavailable or very difficult to use due to displacement. Residual Impact Value is an index of how roads and their use affect wildlife habitat suitability.

The process of calculating Residual Impact Value requires that actual road density be weighted (proportionally changed) to account for the level of use occurring on each road, and further that impacts associated with weighted road density be estimated. The grizzly bear and elk calculation process in this document primarily utilized existing methods and coefficient values (Lyon, 1983; Leege, 1984; Cumulative Effects Model, 1987). Some choices were made as part of this analysis. The work of McLellan and Shackleton (1988), as well as discussions with the U.S. Fish and Wildlife Service (Harms per comm, 1989), was used to set bounds for the level of vehicle use and the appropriate impact class for the grizzly bear. Since the analysis is general and site-specific cover conditions are not known; where different coefficient values were present for cover and noncover situations, a coefficient value midway between the two values was used.

The intent of the road management program is to facilitate habitat use and reduce mortality potential for desirable wildlife. Some motorized administrative and non-administrative use of restricted roads is occurring. The level of use on restricted roads that is compatible with the intent of the program requires definition, as well as a determination of impacts associated with the use. The U.S. Fish and Wildlife Service's amended July 1989 biological opinion indicates that: "A road is considered closed when it is not reasonably driveable by a conventional vehicle due to natural obstructions or when a physical or enforceable administrative restriction or both is employed and managed such that motorized vehicle use level does not exceed 5 vehicles per week during the restriction period".

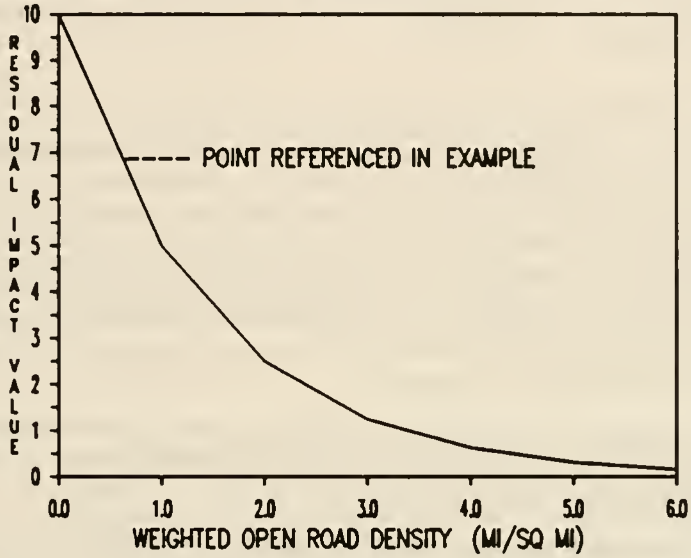
Data from the Glacier View (1988 and 1989) and Hungry Horse (1989) districts was used to estimate the number of roads being used. The data indicated that restricted roads were being used at a level equal to 9 percent of total roads available were being administratively used during the May 15 to November 30 period. Estimated use was increased to 10 percent to account for undocumented administrative and non-administrative use. Effects from this level of use on restricted roads was included in the calculation process.

In the calculation process, it is assumed that roads of varying use levels have different effects on elk or grizzly bear. The process includes a "weighting" feature that converts real road density into a weighted road density and uses an impact curve (Appendix H) to determine effects of roads and their management. Using the grizzly bear coefficient values, Table IV-3 is an example of how real road miles are converted to weighted road miles for an analysis area.

TABLE IV-3 - EXAMPLE OF WEIGHTED ROAD DENSITY CALCULATION

Road Use Class (Vehicles/Week)	Real Open Road Density (1)	Grizzly Bear Coefficient Value (2)	Weighted Open Road Density (1) x (2) = (3)
≤ 1	1.2	0.15	0.18
2 - 5	0.4	0.30	0.12
6 - 20	0.3	0.30	0.09
21 - 100	0.2	1.10	0.22
101 - 500	0.0	1.10	0.00
> 500	0.0	1.10	0.00
Total Density	2.1		0.61

FIGURE IV-1. GRIZZLY BEAR "WEIGHTED" ROAD IMPACT CURVE, MOTORIZED



The weighted road density value of 0.61 from Table IV-3 is compared to the impact curve in Figure IV-1 and results in a Residual Impact Value of 6.9. This process was repeated for all analysis areas and for each season using grizzly bear coefficients, then elk coefficients.

Using available space as the road management analysis tool for grizzly bear and elk is a suitable method for relative comparison of effects of alternatives. However, there are limits to the accuracy of the general technique. Road impacts are averaged over the analysis area being used; therefore, specific road affects to individual sites or habitats are not identified. The analysis results are only as good as the ability of the coefficient values and analysis curves to predict how grizzly bear and elk respond to road use patterns. The values used for elk have been developed and used over considerable time (Perry and Overly, 1976) and received validation testing (Lyon, 1984). Whereas the values used for the grizzly bear were developed in 1987, with much less data and have not received validation testing.

The analysis process was discussed with Jack Lyon (reference bibliography) during May 1990. His comments emphasized the lack of validation testing for the grizzly bear coefficient values and that calculated impacts for high (>2 to 3 mi/mi^2) ORD are generally less accurate than for lower road densities.

This analysis tool is an adequate predictor of road related risk of mortality, primarily if mortality risk is related to motorized use and varies with levels of use. Road/space analysis has not been an accurate predictor of hunting season elk mortality. The high level of pursuit that a large number of hunters practice when hunting elk has led to high exploitation in areas with, as well as without, roads. Road management, along with cover values, can influence the distribution of elk (Lyon, 1984), and the overall rate of elk harvest (Lonner and Cuda, 1982). Grizzly bear tend not to be pursued as aggressively as elk. Although this analysis does not deal with mortality in non-roaded areas, when mortality is a function of opportunistic encounter (human and bear encounters are proportional to human use levels), this analysis adequately considers the relative increased risk of mortality due to alternatives which provide for increased human access.

The statistics that were developed for each alternative (Appendix D Tables and Figures D-1 to D-7 and Appendix F Tables and Figures F-1 to F-7), are an estimate of effects on space availability to areas used by grizzly bear and elk. These statistics represent total area and miles of road within the BMA.

The population information presented in Chapter II for grizzly bear indicates that the population and distributional information presented in the LRMP FEIS was accurate and similar at least to the lower level of the Montana Department of Fish, Wildlife, and Parks 1986 EIS population estimates. Also, a seasonal elevation use pattern was described for grizzly bear across the NCDE. Hunter kill information for Montana general big game hunting districts and summer-fall range areas identified by Flathead National Forest and Montana Department of Fish, Wildlife, and Parks biologists are used as an index to elk population and distribution levels. The final report of the Montana Elk Logging Study (Lyon et al, 1985), indicated that elk prefer moist sites and habitats during the summer period. Areas with these habitat characteristics are more common at higher elevations. For this analysis, areas above 5,000 feet will be considered primary late spring through fall range for elk.

The elevational distribution of roads and space (acres) was evaluated. The break for higher and lower elevations was set at 5,000 feet to coincide with the previously described seasonal elevational use patterns of grizzly bear and elk.

The following values were applied to correct Residual Impact Values, in order to account for the difference in elevational distribution (above and below 5,000 feet) between use by elk and grizzly bear and the road system.

DISTRIBUTION OF ELK USE, GRIZZLY BEAR USE, ROAD MILES AND ACRES, ABOVE AND BELOW 5,000 FEET (VALUES DISPLAYED AS PERCENT)

	BELOW 5,000 FEET				ABOVE 5,000 FEET			
Season	% Elk Use	% Bear Use	% of Roads	% of Area	Elk Use	Bear Use	% of Roads	% of Area
Spring	*20	**39	80	52	*80	**61	20	48
Summer	20	20	80	52	80	80	20	48
***Fall	20	26	80	52	80	74	20	48

* Accounts only for the period after April 15.

** Accounts for both early and late spring, April 1 to June 30.

*** Accounts for both fall and hunting season, September 1 to November 30.

Alternatives 6 and 8 have static year-round application of a road standard, although there are differences in some MS-2 areas between the alternatives. These alternatives do not take into consideration distribution of the road systems in relation to the seasonal use patterns displayed by grizzly bear and elk. Alternative 2 was constructed to accent a more restrictive management program when the wildlife species have the greatest potential of being in the roaded area, and a less restrictive management program when the wildlife species have the lowest potential of being in the roaded area. The risks associated with Alternative 2, compared to Alternatives 6 and 8, are whether:

(1) The grizzly bear population seasonal-use patterns are correctly described.

(2) Some portion of the population (about 25 percent) will be using the roaded area 50 percent of the time during the summer period, with an ORD of 1.5 mi/mi^2.

(3) Is there unaccounted for year-to-year variations in forage availability and grizzly bear use at lower elevations?

Alternative 1 used the LRMP Geographic Units as the analysis area and included only National Forest System lands and roads in the density calculations. The use of 20,000 to 80,000 acre size analysis areas could allow for an uneven distribution of open and closed roads within the Geographic Units. This could allow high impacts on portions of the analysis area; and, due to averaging across the analysis area, this could not be detected. The U.S. Fish and Wildlife Service (July 1989), indicated that analysis areas of 5,000 to 15,000 acres are appropriately sized road density analysis areas for grizzly bear in order to not mask a possible uneven distribution of open roads. Both elk and grizzly bear have home ranges in the thousands of acres. There is no reason to assume they are not using all available areas within their home range. Therefore, in order to fully assess road effects in the general forest environment, all general forest areas and associated roads should be used. Alternative 1 does not account for general forest lands and roads owned by the State of Montana and Plum Creek Timberlands when it occurs within a road analysis area. Alternative 1 could produce high localized ORD within LRMP Geographic Units and also not account for impacts from State of Montana and/or Plum Creek Timberlands lands.

When grizzly bear seasonal elevational use patterns and road and space elevational distribution data were used to correct alternative calculations, Residual Impact Values increased for all alternatives (Appendix D, E, and F Tables and Figures). The greatest increases were for the summer and fall periods. The spring period increased around 2 percent, whereas the summer and fall periods increased from 7 to 9 percent. Table IV-4 shows a tabulation of Residual Impact Values by alternative (the uncorrected Residual Impact Values are from Appendix D Table D-7):

TABLE IV-4 - GRIZZLY BEAR RESIDUAL IMPACT VALUE

Use Seasons	Alt 1		Alt 2		Alt 6		Alt 8	
	Unct	Ct	Unct	Ct	Unct	Ct	Unct	Ct
Spring*	8.35	8.54	8.55	8.72	8.50	8.70	8.50	8.68
Summer	7.40	8.34	7.40	8.34	7.60	8.50	7.70	8.53
Fall**	7.20	7.99	7.35	8.10	7.35	8.10	7.40	8.14

Unct = Uncorrected
Ct = Corrected

* Spring is the average of early and late spring values.
** Fall is the average of fall and hunting season values.

Calculated Residual Impact Value trends for all alternatives are similar whether using uncorrected or corrected values. Calculated values vary up to 10 percent between areas on the Forest, but less than 3 percent for uncorrected values and less than 2 percent for corrected values between alternatives Forest-wide. Forest uncorrected values and corrected values bracket analysis values developed for the LRMP. Uncorrected values are lower and corrected values are higher than the 8.0 value developed in the LRMP analysis. The differences between calculated values for Alternatives 1, 2, 6, and 8 (2 to 3 percent), are within the expected variation due to the calculation process. Therefore, all alternatives display similar values in the way they affect the grizzly bear.

The calculated grizzly bear corrected values for Alternatives 1, 2, 6, and 8 represent impacts due to road development and management on the Forest, moderation of effects to the grizzly bear by application of a seasonal or non-seasonal road management program, and higher or lower road density for some MS-2 areas. These calculated Residual Impact Values represent the magnitude of impacts (unavailable space) to the grizzly bear, increased risk of opportunistic mortality and displacement. The percent changes displayed are the differences between the calculated Residual Impact Value and an environment unaffected by road impacts (10.0). The Residual Impact Value indicates an increased grizzly bear displacement and mortality risk (decrease in overall suitability), compared to an unroaded environment, of approximately 13 to 20 percent within the roaded portion of the Forest. Areas on the Hungry Horse and Swan Lake (Swan Valley) districts display general decreases of up to 25 percent. MS-2 areas on Hungry Horse, Swan Lake, and Glacier View districts may have decreased values of 45 percent during high human use periods (summer and fall) for Alternatives 2 and 6.

The effects of the alternatives on elk display similar patterns as they did for grizzly bear. The difference between alternatives was 1 percent while differences between areas on the Forest (Districts) were as high as 10 percent. When elevational assumptions for elk use were included, calculated Residual Impact Values increased by 4 to 5 percent. Table IV-5 shows a tabulation of Residual Impact Values by alternative (the uncorrected Residual Impact Values are an average of late spring, summer, fall, and hunting values displayed in Appendix F Table F-7).

TABLE IV-5 - ELK RESIDUAL IMPACT VALUE

Alt 1		Alt 2		Alt 6		Alt 8	
Unct	Ct	Unct	Ct	Unct	Ct	Unct	Ct
7.95	8.46	8.05	8.53	8.03	8.52	8.05	8.53

Unct = Uncorrected
Ct = Corrected

D. CUMULATIVE EFFECTS OF ALTERNATIVES 1, 2, 6, AND 8

1. Recreation

A reduction of 10, 11, or 13 percent of the recreation use potential (mile-days) does not appear to be a major effect when compared to the estimated 1,335,000 RVDs of dispersed roaded recreational capacity (Table II-18, LRMP FEIS II-124). Dispersed roaded recreational use projected through the year 2020 is 944,405 RVDs, which is 77 percent of the year 2020 value of 1,226,500 RVDs.

However, the restriction of choice of available roads without a reduction in user numbers will result in concentration of use on other roads or areas above the use level which presently exists. The LRMP calls for providing a range of quality recreational opportunities, both non-motorized and motorized, within the roaded and unroaded Forest environment. Unless a conscious effort is made to accommodate these uses in the most acceptable places, increased use could result in socially unacceptable crowding or perhaps resource impacts. Unless additional area is made available to distribute both roaded and non-roaded recreational use, additional road or user restrictions may eventually be necessary.

Most recreational users support wildlife protection and perpetuation of the species, but the restriction of road access tends to polarize the publics. The level of polarization is proportional to the amount of restriction implemented.

2. Wildlife

The road management for any alternative is considered static in time and effects. The alternatives do not display changes in the effects from road use changes nor increased total road miles as development occurs. Since the major impacts of roads to both grizzly bear and elk are linked to use levels, LRMP and IGBC standards must be followed in relation to project operations and seasonal use patterns of involved wildlife. The amount of open road miles must remain similar to the current level even with increases in total road miles, during non-project periods, to achieve similar levels of habitat suitability. Additional decreases in habitat suitability will occur as management projects are superimposed upon the existing road management program. Since the ORD standard does not apply during project implementation, a suitable mitigation plan for each project that includes road management considerations will be undertaken in order to guard against unacceptable project level and cumulative effects. Human use on future roads, even though closed, will decrease habitat suitability.

Small private holdings at lower elevations (primarily on the Swan Lake and Glacier View districts) affects overall habitat suitability to the grizzly bear (Appendix E Tables and Figures), but have limited affects to elk late spring-fall habitats. Elk ranges are at higher elevation for the analysis period and are affected to a limited extent by low elevation private lands. Because grizzly bear display greater levels of both seasonal as well as individual variation in habitat use and may also be attracted to private lands (with higher levels of mortality risk), private lands must be considered in the cumulative effects to the grizzly bear. Overall decreases in seasonal suitability were 4 to 6 percent greater when private lands were included. Decreased suitability levels were associated with impacts due to residential sites, barns (etc.), and roads. Overall activity levels were assumed to be greater on private land areas compared to general forest lands. Private land effects reduced calculated values by 4 to 6 percent on the Glacier View District, and 6 to 9 percent on the Swan Lake District (Appendix E). Private land effects to bears should be greatest during spring and least during summer, coincident with bear elevational use patterns. Because of lower Residual Impact Values on the Swan Lake District due to roads in the general forest environment, the addition of private land effects indicates marginal suitability for grizzly bear during periods when low elevations are used and/or human use levels are high on roads in a general forest environment.

E. SPECIFICALLY REQUIRED DISCLOSURES

1. Effects of the Alternatives on Women and Minorities

There would be no overall differences between alternatives in effects on minorities, Native Americans, women, or on the civil liberties of any American citizen.

2. Effects of the Alternatives on Floodplains and Wetlands

There are no effects on floodplains and wetlands from any alternatives on the programmatic basis of this proposal.

3. Energy Requirements of Alternatives

The energy required to implement the alternatives, in terms of petroleum products, is insignificant when viewed in light of the national and worldwide petroleum reserves.

4. Effects of the Alternatives on Prime Farmland, Rangeland, and Forest Land

There are no "prime" farmlands, rangelands, or forest lands within the project area. The term "prime" farmlands does not apply to lands within the National Forest System. No effects on "prime" farmlands occurring on other ownerships were identified.

F. POSSIBLE CONFLICTS WITH PLANS AND POLICIES OF OTHER JURISDICTIONS

The following statements are provided to help define areas of potential differences between the agency proposing this action (USDA Forest Service) and the policies, management, and enforcement responsibilities of other agencies.

The Forest Service and the Montana Department of Fish, Wildlife, and Parks work together to manage wildlife, but the missions of the two agencies are different. The Forest Service manages the many resources found on National Forest System lands under the multiple-use concept. In doing so, wildlife habitat may be directly affected and wildlife populations indirectly affected through changes made in vegetation and public access. The Montana Department of Fish, Wildlife, and Parks directly manages wildlife populations by adjusting hunting season, bag limits, and enforcing regulations that affect animal populations.

The Forest Service holds joint responsibility with the U.S. Fish and Wildlife Service for the recovery of threatened and endangered species on National Forest System lands. The U.S. Fish and Wildlife Service regulates and oversees threatened and endangered species recovery activities and serves in an advisory capacity for management activities conducted on the National Forests. The Forest Service implements habitat management activities directed toward the recovery of threatened and endangered species and consults the U.S. Fish and Wildlife Service on the effects of those activities.

The Forest Service, Montana Department of Fish, Wildlife, and Parks, Montana Department of State Lands, and Plum Creek Timberlands entered into a Cooperative Road Management Memorandum of Understanding dated April 18, 1989. This proposal creates potential differences in standards between the Montana Department of State Lands and the Forest Service. The Montana Department of State Lands has an ORD standard of 1 mi/mi^2 for all lands managed with grizzly bear considerations. The proposed alternative would allow for 2 mi/mi^2 on some of the MS-2 lands, which adjoin State land. In order to meet the ORD standard, Plum Creek Timberlands has agreed to close to public use roads on their lands not under the jurisdiction of the Forest Service.

G. PROBABLE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

This proposal does not change what was disclosed in LRMP FEIS IV-124.

This Proposed Action restricts motorized access over that disclosed in the LRMP FEIS.

H. RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

Some recreation opportunities are lost with road restrictions, but wildlife habitat is generally enhanced.

I. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Road restrictions do not constitute an irreversible or irretrievable commitment of resources.

J. CONSISTENCY WITH LRMP STANDARDS APPLICABLE TO THIS ISSUE/TOPIC

All action alternatives would result in Amendment 10 to the LRMP concerning road management standards.

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GLOSSARY

A. GLOSSARY

AFFECTED ENVIRONMENT The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

ALTERNATIVE A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decisionmaking. An alternative need not substitute for another in all respects.

ALTERNATIVE, NO ACTION An alternative that maintains established trends or management direction.

ANALYSIS OF THE MANAGEMENT SITUATION A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

BEAR MANAGEMENT ANALYSIS AREAS (BMA) Specifically identified 5,000 to 15,000 acre areas over which Open Road Density is calculated. Subdivision of a Bear Management Subunit.

BEAR MANAGEMENT SUBUNIT Subdivision of a Bear Management Unit.

BEAR MANAGEMENT UNIT (BMU) Subdivision of the Northern Continental Divide Ecosystem.

CFR Code of Federal Regulations.

CULTURAL RESOURCES The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred are of native peoples, etc.) of an area of prehistoric or historic occupation.

DEVELOPED RECREATION Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DISPERSED RECREATION That portion of outdoor recreation use which occurs outside of developed sites in the unroaded and roaded Forest environment; i.e., hunting, backpacking, and berry picking.

DISTRICT RANGER The official responsible for administering the National Forest System lands on a Ranger District.

ECOSYSTEM A complete, interacting system of organisms considered together with their environment; i.e., a marsh, watershed, or lake.

ENDANGERED SPECIES Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

FOREST SUPERVISOR The official responsible for administering the National Forest System lands in a Forest Service Administrative Unit, which may consist of one or more National Forests or all the Forests within a State.

FOREST SYSTEM ROAD A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of it's resources.

GEOGRAPHIC UNIT Specific areas of the Forest containing common physical, biological, and/or social characteristics. These units were determined by the Districts as manageable boundaries to work with.

HABITAT The place where all organism lives, including the entire range of environmental conditions required for its survival.

HABITAT COMPONENT One segment of the range of environmental conditions of an organism's habitat. An avalanche path is a habitat component of a grizzly bear's habitat.

LAND AND RESOURCE MANAGEMENT PLAN (LRMP) The Flathead National Forest LRMP (Forest Plan) provides integrated management direction for each resource on the Forest. The Forest Plan is in compliance with NFMA (National Forest Management Act of 1976).

MANAGEMENT SITUATION 1 (MS-1) Area that contains grizzly population centers (area key to the survival and recovery of grizzlies where seasonal or yearlong grizzly activity, under natural, free-ranging conditions is common) and habitat components needed for the survival and recovery of the species or a segment of its population.

MANAGEMENT SITUATION 2 (MS-2) Area that lacks distinct grizzly population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. By definition, Management Situation 2 areas are those considered unnecessary for survival and recovery, although the status of such areas is subject to review and change according to demonstrated grizzly population and habitat needs. The effects of major Federal activities or programs on the conservation and recovery of the species are not generally predictable.

MILE-DAYS Product of miles of roads open times number of days they are open. Used for comparison of alternatives.

NATIONAL FOREST MANAGEMENT ACT A law passed in 1976 as amendment to the Forest and Range land Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM All National Forest lands reserved or withdrawn from the public domain of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and Land utilization Projects administered under Title III.

NO ACTION ALTERNATIVE The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.

OFF-ROAD VEHICLE Any vehicle capable of being operated off an established road or trail; e.g., motorbikes, four-wheel drives, and snowmobiles.

OPEN ROAD A road is considered open when it is reasonably and prudently driveable by a conventional passenger car or pickup and is not obstructed by a physical barrier or has not administrative restriction. If motorized vehicle use levels exceed five vehicles per week, a road is considered open.

OPEN ROAD DENSITY (ORD) Ratio, in miles per square mile, of miles of roads open for passenger car and pickup use divided by area in square miles in the analysis area.

PREFERRED ACTION The alternative recommended for implementation by the responsible official from the range of alternatives studied in a Draft Environmental Impact Statement or Assessment under requirements of the 1979 National Environmental Policy Act.

PUBLIC INVOLVEMENT A Forest Service process designed to broaden the information base upon which agency decisions are made by (1) Informing the public about Forest Service activities, plans, and decisions, and (2) Encouraging public understanding about and participation in the planning processes which lead to final decision making.

RANGER DISTRICT Administrative subdivision of the Forest supervised by a District Ranger.

RECREATION VISITOR DAY (RVD) One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).

REGIONAL FORESTER The official responsible for administering a single Region of the Forest Service.

RESIDUAL IMPACT VALUE The Residual Impact Value is an index of habitat suitability that incorporates effects from both road quantity (ORD) and human use. Residual Impact Value indicates the level of displacement and mortality risk expected due to roads and their use. The Residual Impact Value represents a comparison between a particular road management alternative and the same area if no road effects were present.

ROAD A route, constructed or evolved, more than 300 feet in length that is reasonably and prudently driveable with a conventional passenger car or pickup. Features such as trails are not considered in the ORD calculation.

ROAD MANAGEMENT The combination of both traffic and maintenance management operations. Traffic management is the continuous process of analyzing, controlling and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.

SCOPING PROCESS An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and de-emphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly. (Reference CEQ regulations, 40 CFR 1501.7).

SYSTEM ROADS See Forest System Road.

THREATENED AND ENDANGERED SPECIES Any species, plant of animal, which is likely to become an endangered species within the foreseeable future throughout all of a significant portion of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

TIERING Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

B. ACRONYMS

ATV	All Terrain Vehicle
BMA	Bear Management Analysis Area
CEA	Cumulative Effects Analysis
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FWS	U.S. Fish and Wildlife Service
IGBC	Interagency Grizzly Bear Committee
IGBG	Interagency Grizzly Bear Group
LRMP	Flathead National Forest Land and Resource Management Plan
MS-1	Management Situation 1
MS-2	Management Situation 2
NCDE	Northern Continental Divide Ecosystem
NFMA	National Forest Management Act
ORD	Open Road Density
RPA	Forest and Rangeland Renewable Resources Planning Act of 1974
RVD	Recreation Visitor Day
USFWS	U.S. Fish and Wildlife Service

LIST TO WHOM COPIES HAVE BEEN SENT

THE FOLLOWING, FROM THE LRMP MAILING LIST, HAVE BEEN SENT A COPY OF THE DRAFT EIS:

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ALT, BERNIE	RANGE SPECIALIST	KALISPELL	MT
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CENEX	ATTN: CORINNE COURTNEY	BILLINGS	MT
FORTUNE OIL LTD	JOHN ANDERSON	SALT LAKE CITY	UT
INTERMOUNTAIN FOREST INDUSTRY	ASSOCIATION	COEUR D'ALENE	ID
JENSON, ELLEN	LINDSAY, HART, NEIL & WEIGLER	BIOSE	ID
KEATING, JANET	HOLLAND AND HART	BILLINGS	MT
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MONTANA POWER COMPANY	ATTN: ELVIN FITZHUGH	BUTTE	MT
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NATIONAL FOREST PRODUCTS ASSOC	ANNE HEISSENBUTTEL	WASHINGTON	DC
ROCKY MOUNTAIN OIL & GAS ASSOC	ATTN: ALICE BENITEZ	DENVER	CO
TEXACO, INC	ATTN: D. P. LOUGHRY	DENVER	CO
WESTERN MICROWAVE, INC		BOZEMAN	MT

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CLARK, CHARLES	FORESTRY COMMITTEE	TROY	MT
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PROTECT PARK RESOURCES	CANYON COALITION	HUNGRY HORSE	MT
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WILDERNESS SOCIETY	NORTHERN ROCKIES OFFICE	BOZEMAN	MT
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ZABER, DAVID	FRIENDS OF THE NORTHERN	GRASS LAKE	MI

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FLATHEAD VALLEY	COMMUNITY COLLEGE	KALISPELL	MT
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MONTANA STATE UNIVERSITY 2		BOZEMAN	MT
MT BUREAU OF MINES AND GEOLOGY	MONTANA COLLEGE OF MINERAL	KALISPELL	MT
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UNIVERSITY OF MONTANA 1		MISSOULA	MT
UNIVERSITY OF MONTANA 2	ENVIRONMENTAL LIBRARY	MISSOULA	MT
UNIVERSITY OF MONTANA 3	DOCUMENTS DIVISION	MISSOULA	MT
UNIVERSITY OF MONTANA 4	SCHOOL OF FORESTRY	MISSOULA	MT
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FLATHEAD REGIONAL DEV OFFICE	STEPHEN HERBALY, PLNG DIRECTOR	KALISPELL	MT
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USDA FOREST SERVICE 2	LAND MANAGEMENT PLANNING	WASHINGTON	DC
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BURNS, SENATOR CONRAD	UNITED STATE SENATE	WASHINGTON	DC
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C.A.R.E.		CONDON	MT
COMMUNITIES FOR A GREAT N.W.		LIBBY	MT
HOOK, DAVID L.	DIRECTOR/ENVIRONMENTAL AFFAIRS	FELTON	PA
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MONTANA LOGGERS ASSOCIATION		KALISPELL	MT
MONTANA OUTFITTERS & GUIDES	ATTN: C.B. RICH	SEELEY LAKE	MT
MONTANA SNOWMOBILE ASSOC.	ATTN: BOB BUSHNELL	HELENA	MT
MONTANA WOMEN IN TIMBER	NORTHWEST CHAPTER	KALISPELL	MT
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P.F.A.E.S.M.	PEOPLE FOR AN ECON SOUND MT	KALISPELL	MT
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KNUDSON, KEN	ECOLOGICAL RESOURCE CONSULTING	HELENA	MT
PHELPS, JAMES	PUBLIC LANDS CHAIRMAN	BILLINGS	MT
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TOGNI, KATHY	STEVE KELLY	WHITEFISH	MT
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KALISPELL WEEKLY NEWS		KALISPELL	MT
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KJJR RADIO	ATTN: BARRY MORRIS	WHITEFISH	MT
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KPAX TV	ATTN: IAN MARQUART	MISSOULA	MT
MISSOULIAN	ATTN: DON SCHWENNESEN	BIGFORK	MT
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PATHFINDER	ATTN: SUSAN VERNON	SEELEY LAKE	MT
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PACK RIVER LUMBER COMPANY		POLSON	MT
PLUM CREEK TIMBER CO., INC. 1	FLATHEAD UNIT	KALISPELL	MT
PLUM CREEK TIMBER CO., INC. 2	ATTN: LARRY MAGONE	COLUMBIA FALLS	MT
PLUM CREEK TIMBER CO., INC. 3		MISSOULA	MT
PLUM CREEK TIMBER CO., INC. 4	GARY TUCKER, VP RESOURCES	SEATTLE	WA
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STOLTZE LAND & LUMBER COMPANY2	RON BUNTEMIER	COLUMBIA FALLS	MT
SUPERIOR LUMBER CO, INC	ATTN: DON LUCE	COLUMBIA FALLS	MT
WESTERN FOREST INDUSTRIES ASSC		PORTLAND	OR
WTD INDUSTRIES	FRED EBEL, REGIONAL TMBR MRG	SPOKANE	WA

THE FOLLOWING, FROM THE TRAVEL MAP MAILING LIST, HAVE BEEN SENT A COPY OF THE DRAFT EIS:

GROUP CATEGORY = BUSINESS/INDUSTRY

	Big Sky Cycle	Somers	MT
Steve Felt	Bigfork Chamber of Commerce	Bigfork	MT
	Columbia Saw Shop	Columbia Falls	MT
	Desert Mountain Ranch & Resort	West Glacier	MT
Larry Jochim, President	Flathead Bank of Bigfork	Bigfork	MT
	Fun Unlimited	Columbia Falls	MT
Tom Thompson	Glacier Wilderness Ranch	West Glacier	MT
Larry Vielleux	Izaac Walton Inn	Essex	MT
Natural Resource Committee	Kalispell Chamber of Commerce	Kalispell	MT
	Leland's Honda & Suzuki BMW	Kalispell	MT
	Mountain States Cysle & Satellite	Seeley Lake	MT
Kent R. Johnson	Panarama Ranch	Polebridge	MT
	Power Sports West	Whitefish	MT
	Rocky Mountain Outfitter	Kalispell	MT
	Ronan Sports Cycle	Ronan	MT
Gary Hayward	Seeley Swan Sports	Seeley Lake	MT
	Sportsman & Shi Haus	Kalispell	MT
	Spotted Beer Ranch	Lincoln	NE
Ed Desrosier	Summit Station	East Glacier	MT
	T & C Motor Sports	Kalispell	MT
	Terry's Artic Cat	Kalispell	MT
A.J. King President	Valley Bank of Kalispell	Kalispell	MT

GROUP CATEGORY = CONSERVATION/ENVIRONMENTAL

Adena Cook, Public Lands Dir.	BlueRibbon Coalition Inc.	Idaho Falls	ID
Stewart Miller	Browning Snowmobilers	Browning	MT
Sharlon Willows	Canyon Coalition	Hungry Horse	MT
	Continental Divide Trail Soc.	Bethesda	MD
Flathead Advisory Tech. Staff	Courthouse East, Room 414	Kalispell	MT
Grant Barnard	Cross-country Ski Club	East Glacier	MT
Bob Pellet	Cutbank Snowgoers	Cutbank	MT
	Ecology Center	Missoula	MT
Bernie Lund	Flathead Back Country Horsemen	Kalispell	MT
Mark Ottey	Glacier Nordic Ski Club	Kalispell	MT
B Gary Hurd, President	HOO-HOO No. 187	Kalispell	MT
Darla Tietz	Kalispell Snowmobilers	Kalispell	MT
	Mission Mtn Snowmobile Club	Polson	MT
	Mission Valley Backcountry Horsemen	Ronan	MT
Eileen Damone, Environ Analyst	Montana Bowhunters Association	Lewistown	MT
C. B. Rich	Montana Outfitters & Guides	Seeley Lake	MT
Nina Smith	Montana Snowmobile Association	Bozeman	MT
Teddye Beebe, President	Montana Women in Timber	Libby	MT
Lilli Ann Martin, President	Montana Women in Timber, NW Chapter	Kalispell	MT
Doug Abelin	Motorcycle Club	Cutbank	MT
Fishing & Floating	Outfitters Association of Montana	Livingston	MT

GROUP CATEGORY = EDUCATION/LIBRARIES

Dr.Charles Jonkal	Border Grizzly Project	Missoula	MT
Dr. Robert Ream	Wolf Ecology Project	Missoula	MT

GROUP CATEGORY = GOVERNMENT AGENCIES

Leonard Mountain Chief	Blackfeet Indian Nation	Browning	MT
	Blackfeet Tribal Council	Browning	MT
Blackfeet Agency	Bureau of Indian Affairs	Browning	MT
Tribal Council	Confederated Salish-Kootenai Tribe	Pablo	MT
	Flathead County Commissioners	Kalispell	MT
Brace Hayden, Ecosystem Coor.	Glacier National Park	West Glacier	MT
Gil Lusk, Superintendent	Glacier National Park	West Glacier	MT
Rights Protection Division	U.S. Bureau of Indian Affairs	Pablo	MT
Paul Kruger	U.S. Bureau of Land Mgnt, Mt State Off.	Billings	MT
Fisher River Ranger District	USDA Forest Service, Kootenai NF	Libby	MT
Fortine Ranger District	USDA Forest Service, Kootenai NF	Fortine	MT
Rocky Mtn. Ranger District	USDA Forest Service, L & C NF	Choteau	MT
Plains/T Falls Ranger Dists.	USDA Forest Service, Lolo NF	Plains	MT
Seeley Lake Ranger District	USDA Forest Service, Lolo NF	Seeley Lake	MT
Kootenai National Forest	USDA Forest Service, Planning Section	Libby	MT
Lewis & Clark National Forest	USDA Forest Service, Planning Section	Great Falls	MT
Lolo National Forest	USDA Forest Service, Planning Section	Missoula	MT

GROUP CATEGORY = GROUPS/ASSOCIATIONS

Doug Abelin	Cut Bank Trailbike Riders Association	Cut Bank	MT
Fred Weber, President	Echo Lake Home Owners Association	Bigfork	MT
Don Artley, Environ. Coord.	Montana Division of Forestry	Missoula	MT
Bob Garner, Leg/Land Use Coor.	Montana Trail Bike Riders Association	Bozeman	MT
Linda Ellison	Montana Trail Bike Riders Association	Bozeman	MT
Regional Supervisor	Mt Dept. of Fish Wildlife & Parks	Kalispell	MT
John Fredrick, President	North Fork Preservation Association	Polebridge	MT

GROUP CATEGORY = MEDIA

Steve Fetveit	KCFW TV	Kalispell	MT

THE FOLLOWING, FROM THE LRMP MAILING LIST, HAVE BEEN SENT A COPY OF THE BROCHURE:

Group Category: BUSINESS/INDUSTRY

CHASE, CRAIG	BIOMASS ENERGY SYSTEMS	BELLEVUE	WA
EXXON COMPANY, U.S.A.		MIDLAND	TX
EXXON COMPANY, USA	ATTN: FERNANDO BLACKGOAT	DENVER	CO
GRANDE DOMAIN RETREATS	ATTN: DANA COLE	LINCOLN	NE
HARVEY, MIKE	RECREATION PLANNER	REEDS PORT	OR
JALKOTZY, PETER S.	ENV. DIVISION, 400 MONENCO PL	CANADA T2P 3W3	
LINDSAY, HART, NEIL & WEIGLER		PORTLAND	OR
MASON, BRUCE & GIRARD, INC	ATTN: CARL NEWPORT	PORTLAND	OR
PACIFIC POWER & LIGHT CO. 1	ATTN: CHUCK TURNBULL	PORTLAND	OR
PACIFIC POWER & LIGHT CO. 2	ATTN: TOM HOSLER	PORTLAND	OR
SPRATT & ASSOCIATES	ATTN: MARC SPRATT	KALISPELL	MT
STIRLING, DALE A.	ENVIRONMENTAL HISTORIAN	EDMONDS	WA
THOMPSON, JIM	ARCHITECTS DESIGN GROUP	KALISPELL	MT
YOCKIM, RON	PRAIRE WOOD PRODUCTS	RIDDLE	OR

Group Category: CONSERVATION/ENVIRONMENTAL

EARTH FIRST! 1	DAVE FORMAN	TUCSON	AZ

Group Category: EDUCATION/LIBRARIES

BRIGHAM YOUNG UNIVERSITY	DR. JERRAN T. FLINDERS	PROVO	UT
COLORADO STATE UNIVERSITY 1		FORT COLLINS	CO
COLORADO STATE UNIVERSITY 2	ATTN: JEFFREY J. GAILIUM	FORT COLLINS	CO
MICHIGAN STATE UNIVERSITY	LARRY LEEFERS	EAST LANSING	MI
UNIVERSITY OF MICHIGAN	ATTN: DALE BLAHNA	ANN ARBOR	MI
UNIVERSITY OF MINNESOTA	FORESTRY LIBRARY	ST. PAUL	MN
UNIVERSITY OF OSLO	PROFESSOR J. GOESSING	0316 OSLO NORWAY	
UNIVERSITY OF WISCONSIN	DEPARTMENT OF FORESTRY	MADISON	WI
UNIVERSITY OF WYOMING 1	ATTN: DAVID S. BROOKSHIRE	LARAMIE	WY
UNIVERSITY OF WYOMING 2	ATTN: ROBERT KEITER	LARAMIE	WY
UNIVERSITY OF WYOMING 3	ATTN: MIKE YOUNG	LARAMIE	WY
WASHINGTON STATE UNIVERSITY 1	DEPARTMENT OF FORESTRY	PULLMAN	WA
YALE LAW SCHOOL	FOREST MANAGEMENT STUDY GROUP	NEW HAVEN	CT
YALE UNIVERSITY 1	ATTN: CLARK BINKLEY	NEW HAVEN	CT
YALE UNIVERSITY 2	BILL BURCH, PROF. NAT RES MGMT	NEW HAVEN	CT

Group Category: GOVERNMENT AGENCIES

AGRICULTURE STABILIZATION &	CONSERVATION SERVICE	KALISPELL	MT
ANIMAL/PLANT HEALTH INSP SERV	U.S. DEPARTMENT OF AGRICULTURE	HYATTSVILLE	MD
B.C. FOREST SERVICE	MINISTRY OF FORESTS & LANDS	CANADA V1C 4H4	
BONNEVILLE POWER ADMIN 1	ANTHONY MORRELL	PORTLAND	OR
DIVISION OF FOREST BIOLOGY	TAIWAN FORESTRY RESEARCH INST.	REP. OF CHINA	
ENVIRONMENTAL PLANNING DIV	JAKE CARNOP	MALMSTROM AFB	MT
MISSOULA COUNTY COMMISSIONERS		MISSOULA	MT
USDA RURAL ELECTRIFICATION AD	ATTN: ASST ADMINISTRATOR FOR	WASHINGTON	DC
USDA RURAL ELECTRIFICATION ADM	ENVIRONMENTAL POLICY OFFICE	WASHINGTON	DC
USDA-SCS-SNOW SURVEY		BOZEMAN	MT
WASHINGTON STATE UNIVERSITY 2	DEPT OF FORESTRY & RANGE MGMT	PULLMAN	WA
WATERTON NATIONAL PARK	BIRNEY LIEFF, SUPERINTENDENT		

Group Category: GOVERNMENT REPS

HAFFERMAN, WILLIAM		LIBBY	MT

Group Category: GROUPS/ASSOCIATIONS

MCQUARY, JULIE	% ENVIROSPHERE	BELLEVUE	WA
ROCKY MOUNTAIN HERITAGE	TASK FORCE	LAKEWOOD	CO

Group Category: INDIVIDUALS

ANDERS, JERRY		COLUMBIA FALLS	MT
ARMSTRONG, DR. JAMES H.		KALISPELL	MT
AUSK, KEN		COLUMBIA FALLS	MT
BARGE, LARRY D.		KALISPELL	MT
BAY, CRANDALL		CAZADERO	CA
BECK, BOB		POLSON	MT
BEISER, CAROLYN M.		FORT COLLINS	CO
BENEZET, J.		FISH LAKE VALLEY	NV
BERNER, DAVID & CAROLINE		CONDON	MT
BHEND, JOHN		HELENA	MT
BISHOP, BILL		POLSON	MT
BLANK, D.L.		WHITEFISH	MT
BONDERUDE, DR. LARRY J.		SHELBY	MT
BOODY, BRUCE		WHITEFISH	MT
BRADEN, BYRON		BOTHELL	WA
BRAUN, STEVE		COLUMBUS	OH
BROGGER, DR. J. N.		RONAN	MT
BROOKS, PAT		SAN JOSE	CA

BROWN, GENE		BIGFORK	MT
BROWN, LARRY J.		CUT BANK	MT
BROWN, RAY		POLEBRIDGE	MT
BRUCE, PAUL		WHITEFISH	MT
BRUNO, LOUIS		EAST GLACIER	MT
BURKHART, PAUL		KALISPELL	MT
BURNS, RANDY		KALISPELL	MT
CADA, FRANK		LOVELAND	CO
CAFFERY, PAT		SEELY LAKE	MT
CATON, ELAINE L.		WEST GLACIER	MT
CHADWICK, DOUGLAS		WHITEFISH	MT
CHASE, JOHN		GREAT FALLS	MT
CHASE, MYRON P.		GREAT FALLS	MT
CHEEK, JERRY D.		KALISPELL	MT
CHEMAN, STEVE & MARY		KALISPELL	MT
CLOTE, VALERIE J.		TUCSON	AZ
COLLINS, RANDALL C.		KALISPELL	MT
CONGDON, WALLY		MISSOULA	MT
CONNELLY, THOMAS H.		DENVER	CO
CONNER, JAMES R.		KALISPELL	MT
COVERDELL, RICHARD R.		COLUMBIA FALLS	MT
COX, RON		PENDLETON	OR
CROOK, JEFFREY		SANDY	OR
CUNNINGHAM, BILL		FRENCHTOWN	MT
CURTIS, JAMES F.		MISSOULA	MT
CURTISS, RONALD & PATRICIA		KALISPELL	MT
DAGGER, STEVE R.		BIGFORK	MT
DARROW, GEORGE		BIGFORK	MT
DETHLOFF, HENRY C.	INTAGLIO, INC.	COLLEGE STATION	TX
DONOFRIO, MAC		WEST GLACIER	MT
DOOD, ARNOLD	MT STATE UNIVERSITY CAMPUS	BOZEMAN	MT
DOWNES, LEE		COLUMBIA FALLS	MT
DUCHARME, GEORGE K.		RONAN	MT
EGENHOFF, TERRY		MISSOULA	MT
EKLUND, DALLAS		KALISPELL	MT
ELLIOTT, JIM	% CHAMPION	MILLTOWN	MT
ELLIS, BONNIE K.		POLSON	MT
ELLIS, GEORGE		KALISPELL	MT
ELLISON, LINDA		BOZEMAN	MT
EMERSON, JOHN L.		KALISPELL	MT
EVANS, JONATHAN	BOTANY DEPARTMENT	DURHAM	NC
FAIRCHILD, MIKE		KALISPELL	MT
FERRELL, DOUGLASS & MELINDA		TROUT CREEK	MT
FREEMAN, JAMES H.		VICTOR	MT
GAITIS, JAMES M.		POLEBRIDGE	MT
GALL, KIMBERLY		COLUMBIA FALLS	MT
GATES, ROBERT S. JR.		KALISPELL	MT
GEARY, THOMAS JR.		HELMVILLE	MT
GIDDINGS, BETH MORGAN		FORSYTH	MT
GRAF, RICHARD L.		WHITEFISH	MT
GRATCH, ALAN		EVANSTON	IL
GREER, BRUCE & BEV		WHITEFISH	MT
GROSS, JACK E.		KALISPELL	MT
GUNDERSON, DALE A.		KALISPELL	MT
GUNDERSON, KARI	JOSEPH FLOOD	CONDON	MT
GUNLOGSON, JOHN C.		WASILLA	AK
HAGEN, RONALD D.		COLUMBIA FALLS	MT
HAIRE, DAVID		LARAMIE	WY
HALL, JOHN L.		GIRDWOOD	AK
HAMMER, WAYNE		KALISPELL	MT
HANNAH, JAMES N.		CUT BANK	MT
HANSEN, DON		SWAN LAKE	MT
HANSON, JERRY E.		WHITEFISH	MT
HEBERLING, JON L.		KALISPELL	MT
HEDSTROM, BILL H.		KALISPELL	MT
HILGEMANN, JAMES		SELBY	SD
HINTZEN, PAUL		TUCSON	AZ
HOLDENER, NICOLE		LOS ANGELES	CA
HOLT, JOHN E.		WHITEFISH	MT
HOROWITZ, ELLEN		POLEBRIDGE	MT
HOWARD, DONALD		KALISPELL	MT
HUMPHREYS, CURTIS		KALISPELL	MT
HUTTEN, JEFFREY		KILA	MT
JACOBSON, L. KIM		GREAT FALLS	MT
JENKINS, KURT	DEPT. OF WILDLIFE & FISHERIES	BROOKINGS	SD
JOHNS, JACK J.		SOMERS	MT
JOHNSON FAMILY		KALISPELL	MT
JOHNSON, AL		KALISPELL	MT
JOHNSON, DIANE		BIGFORK	MT
JOHNSON, HARRY M.		KALISPELL	MT

JORDAN, MEL		KALISPELL	MT
KELLER, CHARLES E.		KALISPELL	MT
KELLOGG, DENNIS & KITTY		BIGFORK	MT
KINDT, SANDY		KALISPELL	MT
KINSMAN, ED		KALISPELL	MT
KLAWITTER, RALPH		MISSOULA	MT
KOHLMAN, PAUL C.		BILLINGS	MT
KOPP, ADOLPH JR.		SWAN LAKE	MT
KRANZ, JAMES R.		COLUMBIA FALLS	MT
KUSTUDIA, MIKE		WHITEFISH	MT
KUSUMOTO, HELOSHI		KALISPELL	MT
LAKE, MIKE		CONDON	MT
LANDEEN, NEIL		ST. PAUL	MN
LANG, MRS. JOSEPH T.		POLEBRIDGE	MT
LEHMAN, ROBERT		KALISPELL	MT
LILLIS, BURT		HAYDEN LAKE	ID
LINDLEY, LAURA		DENVER	CO
MACDONALD, F.E.		BIGFORK	MT
MARTIN, EDITH		COLUMBIA FALLS	MT
MARTINEAU, FRED		VENTNOR	NJ
MARTINEAU, LINDEN P.		CHEVY CHASE	MD
MATCHETT, MARC R.		LEWISTOWN	MT
MATHIESON, CINDY		KALISPELL	MT
MATTHEWS, PAUL		CANADA VON 1BO	
MCCABE, LIZ		SANDPOINT	ID
MCCRACKEN, DONALD		LIBBY	MT
MERRITT, M.		BOUSTON	TX
MEYER, CATHERINE S.		RONAN	MT
MEYER, NEIL L.		SWAN LAKE	MT
MICHELS, ALLEN & KAREN		KALISPELL	MT
MINTA, STEVE		WHITEFISH	MT
MITCHELL, BRENT & KAY		KALISPELL	MT
MITCHELL, JOHN		REDDING	CT
MOHR, CRAIG		WHITEFISH	MT
MOORE, PETER & SHEILA		POLEBRIDGE	MT
MOORE, WILLIAM R. "BUD"		CONDON	MT
MORLEY, GREG & ANNE		SWAN LAKE	MT
MORRISON, RALPH		BIGFORK	MT
MORROW, SUSAN		SWAN LAKE	MT
MOTE, KARL W.		SPOKANE	WA
MURPHY, KEVIN		WEST GLACIER	MT
MUSTON, DAVE & KATHRYN		LAPORTE	TX
MYERS, BILL		BIGFORK	MT
O'BRIEN, KEVIN		SILVER SPRINGS	MD
O'DELL, TRARON E.		KORBEL	CA
O'NEIL, IVAN		KALISPELL	MT
O'RIORDAN, HUGH W.	LINDSAY, HART, NEIL &	BOISE	ID
OBRAY, GAY		KALISPELL	MT
OGLE, LYNN P.		KALISPELL	MT
OKONSKI, JERRY P.		LIBBY	MT
OLIVER, DENNIS		COLUMBIA FALLS	MT
OUELLETTE, GREG		POLEBRIDGE	MT
OWEN, BARBARA		KALISPELL	MT
OWENS, DANIEL AND KAREN		POLEBRIDGE	MT
PERONNE, MARIE C.		CLARENCE	NY
PERSHA, EUGENE		EDINA	MN
PERSONS, CLIFFORD O.		WHITEFISH	MT
PHILLIPS, MARY		CONDON	MT
PORTER, LEROY		COLUMBIA FALLS	MT
PRACH, EDWIN F.		WHITEFISH	MT
RAIMAN, MIKE & CAROL		KALISPELL	MT
RAIN, JEFFREY		CARVER	MN
REICK, KEN		BIGFORK	MT
REIS, MICHAEL		WILMINGTON	DE
RHODES, DOUGLAS		KALISPELL	MT
RICARDS, DAVID		VENTURA	CA
RICHARDS, PAUL		BOULDER	MT
RICHERSON, DAVID		DEER PARK	TX
RIGLER, DOUGLAS		WHITEFISH	MT
RINCK, BILL & VICKI		CORAM	MT
ROHLF, DAN		VANCOUVER	WA
ROST, BERNICE		BIGFORK	MT
RUCH, JOHN		LAKESIDE	MT
RUNDLE, JOHN D.		TEMPE	AZ
RUSSO, ANTHONY		WOODBURY	CT
SAKAHARA, GARY		KALISPELL	MT
SAMMONS, HERB		CUT BANK	MT
SAUERBIER, NEIL		KALISPELL	MT
SCHNACKENBERG, HENRY		EVERETT	WA
SCHOTT, JOSEPH C.		BEALE AFB	CA

SEDLACK, ELAINE		WEST GLACIER	MT
SIMONICH, MARK		COLUMBIA FALLS	MT
SNYDER, ELAINE F.		KALISPELL	MT
SOUKKALA, ART		PABLO	MT
SPEELMAN, JOHN		KALISPELL	MT
SPERRY, CHUCK		KALISPELL	MT
SPRUNGER, ELMER		BIGFORK	MT
STAHLBERG, MICHAEL W.		KALISPELL	MT
STEELE, GARY		ST IGNATIUS	MT
STENHOUSE, DAVID L.		CONDON	MT
STENTZ, JOHN C.		KALISPELL	MT
STOLTZ, JIM		BIG SKY	MT
STRODTBECK, VERNON C.		KALISPELL	MT
SWAN VALLEY LLAMAS	MICHAEL & NANCY MCGREW	CONDON	MT
TAPLIN, J. E.		BOZEMAN	MT
TAYLOR, RYAN		COLUMBIA FALLS	MT
TITUS, ROSS		BIGFORK	MT
TOMSHECK, ARTHUR		CUT BANK	MT
TURNER, GEORGE		KALISPELL	MT
URQUHART, JAMES		SAN RAFAEL	CA
VAN EPPS, CHARLES P.		BROOMFIELD	CO
VAN ROOY, SUSAN		SEELEY LAKE	MT
VASSALLO, GARY		SOMERS	MT
VENTERS, DAVID & CYNTHIA		KALISPELL	MT
VERNAY, DON		BIGFORK	MT
VINCENT, BRUCE		LIBBY	MT
VITALE, FRANK J.		POLEBRIDGE	MT
VONGONTARD, ADI & CAREN		WHITEFISH	MT
VOSS, ALLEN		MISSOULA	MT
WALKER, E. PEROT		LAFAYETTE HILL	PA
WEAVER, ANDREW		KALISPELL	MT
WEYDEMEYER, WINTON		FORTINE	MT
WHEELER, ANNE		WEST GLACIER	MT
WHEELER, JOHN		LARAMIE	WY
WIDENER, GEORGE		WHITEFISH	MT
WIDBALM, MERVIN F. & CATHY		VALIER	MT
WILLIAMS, TERRY L.		KALISPELL	MT
WILLIS, F. SMITH		KALISPELL	MT
WOODARD, R. ALAN		DENVER	CO
WOODS, CHARLES F.		LIBBY	MT
WORTH, RODGER & DONNA L.		KALISPELL	MT
YATES, RICK		WEST GLACIER	MT
YAW, HELEN E.		CASCADE	MT
YOUNG, JODI & KIM		BIGFORK	MT
YOVETICH, MIKE		LAUREL	MT
ZUNDEL, DONALD & KATHLEEN		KALISPELL	MT

THE FOLLOWING, FROM THE TRAVEL MAP MAILING LIST, HAVE BEEN SENT A COPY OF THE BROCHURE:

GROUP CATEGORY = BUSINESS/INDUSTRY

	Big Mountain Ski Shop	Whitefish	MT
Celia Lindblom, President	Scandinavian Design, Inc	New York	NY
	Summit Station	East Glacier	MT

GROUP CATEGORY = CONSERVATION/ENVIRONMENTAL

Gary Christianson	Back Country Horsemen	Kalispell	MT
James Archer	Back Country Horsemen of Missoula	Missoula	MT
Philip Knight	Earth First	Bozeman	MT
	Flathead Audubon Society	Bigfork	MT
Lex Blood	Glacier Institute	Columbia Falls	MT
Gary Steele	MT Earth First	St. Ignatius	MT
Gordon Stewart, President	Montana Wildlife Federation	Kalispell	MT
Tom France	National Wildlife Federation	Missoula	MT
Mike Raiman	Swan View Coalition (Member)	Kalispell	MT
Don Alley	Trout Unlimited	Kalispell	MT
Mike Brennan	Trout Unlimited, NW Montana Chapter	Whitefish	MT
Ken Wall	Wilderness Institute	Missoula	MT
Arnold Bolle	Wilderness Society	Missoula	MT

GROUP CATEGORY = EDUCATION/LIBRARIES

	Flathead High School	Kalispell	MT

GROUP CATEGORY = GOVERNMENT AGENCIES

Ray Shearer	Forestry Sciences Laboratory	Missoula	MT
Wyman Schmidt	Forestry Sciences Laboratory	Bozeman	MT
Sandra Keys	Glacier National Park	West Glacier	MT

GROUP CATEGORY = GROUPS/ASSOCIATIONS

	Bigfork Senior Center	Bigfork	MT
	Courthouse East Dining Room	Kalispell	MT
Ralph Johnson, President	East Slope Taxpayers Association	Browning	MT
Glenn Marx, Exec. Director	Flathead Basin Commission	Helena	MT
H.C. Ross, DVM, President	Flathead Lake Protection Assoc.	Lakeside	MT
	Golden Agers Senior Center	Whitefish	MT
	Kalispell Senior Center	Kalispell	MT
John Gatchell	MT Wilderness Association	Helena	MT
Richard Kuhl	Montana Wilderness Association	Kalispell	MT
Mike Aderhold	Mt Dept. of Fish Wildlife & Parks	Kalispell	MT
Larry Wilson	North Fork Improvement Assoc.	Columbia Falls	MT
	North Valley Senior Center	Columbia Falls	MT

GROUP CATEGORY = INDIVIDUALS

Ray Abbot		Kalispell	MT
John L. Aemisegger		Fortine	MT
Nicholas F. Aemisegger		Kalispell	MT
Arnie Aklestad		Bigfork	MT
Bernard Alt		Kalispell	MT
Rick Anderson		Kalispell	MT
Tom Anderson		Columbia Falls	MT
Bill Armstrong		West Glacier	MT
Al & Dorothy Arvidson		Bigfork	MT
Minnie Bachler		Whitefish	MT
Norris G. Bacon		Martin City	MT
Greg Bain		Kalispell	MT
Eva Bair		Kalispell	MT
Richard E. Baldwin		Missoula	MT
Chauncey D. Beebe		Whitefish	MT
Charles S. Billheimer		Kalispell	MT
Oz & Eloise Black		Whitefish	MT
Donald W. Bohna		Bigfork	MT
Ruth Botchek		Kalispell	MT
Mr. & Mrs. Norman Bouchey		Columbia Falls	MT
John W. Brinkerhoff		Columbia Falls	MT
Larry Brown		Cut Bank	MT
Emmanuel Buck		Kalispell	MT
Pat Buls		Kalispell	MT
G. I. Burk		Olney	MT
Frederick F. Burnell		Stevensville	MT
Marion Byers		Columbia Falls	MT
John Cada		Kalispell	MT
William Chapman		Columbia Falls	MT
Bill Chilton		Kalispell	MT
Howard Compton		Bigfork	MT
Irene Compton		Columbia Falls	MT
Glen Conklin		Kalispell	MT
E. L. Corpe		Kalispell	MT
Floyd W. Coverdell		Bigfork	MT
Albert J. Cramer		Polson	MT
Robert Croskrey		Bigfork	MT
Maurice Cusick		Whitefish	MT
Pete G. Danielson		Kalispell	MT
Floyd R. Darling		Columbia Falls	MT
Mrs. Marvin "Flip" Darling		Columbia Falls	MT
Gordon M. Daugharty		Coeur d Alene	ID
Mr. & Mrs. John Davies		Kalispell	MT
Mrs. Rubina Davis		Kalispell	MT
Jim Dedman		Somers	MT
James Dettmann		Kalispell	MT
Arnold H. Dillard		Bigfork	MT
Jim Dillon		Kalispell	MT
Dallas Eklund		Kalispell	MT
John L. Emerson		Kalispell	MT
Mrs. Warren Ensign		Missoula	MT
Thomas Lee Evans		Kalispell	MT
Mr. Bob Feilzer		Kalispell	MT
Ms. Marjorie Fisher		Whitefish	MT
Abner W. Foskette		Lewiston	ID
Bill Fratt		Kalispell	MT
Ms. Margaret Fredenberg		Kalispell	MT
John P. Fredricks,	Ann & Richard Halley, & Helena Moody	Panorama City	CA
James H. Freeman		Victor	MT
Adam E. Funk		Kalispell	MT

Mr. Lou Gates		Kalispell	MT
Robert Gillespie		Hayden Lake	ID
Mark M. Glese		Racine	WI
Mr. Charlie Goff		Condon	MT
Ron Good		Petaluma	CA
John Gordon		Kalispell	MT
Stan & Marilyn Gossack		Greaat Falls	MT
Mr. Merrill Greeman		Frankfort	KY
Frank Gregg		Whitefish	MT
Jack Gross		Kalispell	MT
Mr. Harry Gruner		Mesa	AZ
Ruth Guinard		Kalispell	MT
Lellie Gardner Gustafson		Orinda	CA
Mr. Clark Hamer		Libby	MT
John Harder		Whitefish	MT
Mrs. Harley Hartson	Palomar West Estates	San Marcos	CA
Eugene Haynes		Columbia Falls	MT
Mr. Carter J. Helseth		Kalispell	MT
James J. Higgins	& Laurie M. Hanson	Cambridge	VT
Ms. Gladys Hjort		Kalispell	MT
Mr. Warren Hogue		Bigfork	MT
Richard Holmes		Marion	MT
Winston Howard		Pahoa	HI
Charles R. Hunter		Missoula	MT
Jim Hutchens		Whitefish	MT
Neil Hyde		Columbia Falls	MT
Mr. William H. Ibenthal		Colville	WA
Mr. Jim Irwin		Whitefish	MT
Mr. Phil Iverson		Columbia Falls	MT
Lemoyne D. & Eunice H. James		Polebridge	MT
Mr. Dempsey Johnston		Columbia Falls	MT
Mr. Maurice R. Johnson		Columbia Falls	MT
Mr. Orlo Johnson		Centralia	WA
Mr. Oscar T. Johnson		Kalispell	MT
Ward Junkermyer		Great Falls	MT
Mr. Walter Kasberg		Kalispell	MT
Less Keareney		Seeley Lake	MT
Ron Kennedy		Columbia Falls	MT
Wayne Kennedy		Columbia Falls	MT
Mr. James Kline		Whitefish	MT
Mr. Burl Kratzer		Condon	MT
Loren Kreck		Columbia Falls	MT
Mr. Floyd LaBrant		Kalispell	MT
Mr. Erling R. LaSalle		Kalispell	MT
Mr. Kenneth R. Larson		Whitefish	MT
Mr. Tom Lawrence		Bigfork	MT
Keith J. Learn		Kalispell	MT
Mr. Roswell Leavitt		Missoula	MT
Ms. Alda Liebelt		Sommers	MT
Robert C. Lilienthal		Kalispell	MT
Mr. George A. Mahrt		Libby	MT
Mr. Carl Mallen		Hungry Horse	MT
Mr. Ray Managhan		Whitefish	MT
Edith Martin		Columbia Falls	MT
Mr. Glen A. Maryott		Coeur d'Alene	ID
Liz McCabe		Sandpoint	ID
Douglas McCready		Bend	OR
Patrick McKinney		Fleetwood	PA
Chester & Siri McWhorten		Kalispell	MT
Frank B. Meyer		Columbia Falls	MT
Mrs. Esther Miller		Elmo	MT
Mr. David Minister		Kalispell	MT
Mr. Joseph S. Misiewicz		Kalispell	MT
Don Mitch		Cut Bank	MT
Mr. Marvin M. Monfils		Columbia Falls	MT
William R. "Bud" Moore		Condon	MT
Greg Morley		Bigfork	MT
Robert F. Mueller		Staunton	VA
Dave & Lauren Naswad		Edgewater	CO
Ms. Venita Nelson		Kalispell	MT
Bernard Noe		Grand Canyon	AZ
Mr. & Mrs. F. S. Oblak		Miami	FL
Mr. A. H. Olson		Coeur d'Alene	ID
Mr. Joe Opalka		Columbia Falls	MT
Mr. Howard L Osterman		Kalispell	MT
Mr. Wes Ostheller		Kalispell	MT
Mr. Dave Owen		Kalispell	MT
Bud Pagel		Columbia Falls	MT
Ms. Mae O. Paquette		Helena	MT
Mrs. Theodore Paullin		Kalispell	MT

Walter & Dorothy Pelech		Tucson	AZ
Ed and Alice Peter		Kalispell	MT
Mr. Walter S. Peterson		Kalispell	MT
Fred Phillips		Kalispell	MT
Mr. Joseph M. Pomajevech		Kalispell	MT
Mr. Art Powell		Ronan	MT
Kenneth Proefrock		Cut Bank	MT
Mark Quire		Nederland	CO
Mr. George J. Racely		Great Falls	MT
Tom Reynolds		Polebridge	MT
Terry Rick		Martin City	MT
Mr. Harry Rickard		Columbia Falls	MT
Mrs. Charles Rickard		Kalispell	MT
Mr. Clifford W. Robertson		Kalispell	MT
Mr. John C. Robertson		Columbia Falls	MT
Mr. John Robinson		Bigfork	MT
Mr. Hans Roffler		Lakeside	MT
Mr. Gerald G. Rose		Kalispell	MT
Mr. George F. Rouse		Libby	MT
Mr. Chuck Samuelson		Bigfork	MT
Mr. Joe Sankovic		Kalispell	MT
Mr. Norman Schappacher		Kalispell	MT
Mr. Hank Schlueter		Polson	MT
John Schmidt		East Glacier	MT
Mr. James Seek		Kalispell	MT
Harvey Sherman		Sebastopol	CA
Victor Sistok		Kalispell	MT
Mr. Olander Slethaug		Bigfork	MT
Mike Soelter		Condon	MT
Barb and Pat Spencer		Polebridge	MT
Ms. Julia Stark		Kalispell	MT
Mr. John C. Stentz		Kalispell	MT
Mr. Clarence Stilwell		Seely Lake	MT
Mr. Lawrence J. Stremcha		Kalispell	MT
Mr. Vern Strodtbeck		Kalispell	MT
Mr. Herbert P. Styler		Condon	MT
Mr. John S. Swallow		Kalispell	MT
Mr. Cal Tassinari		Condon	MT
Mrs. Edith E. Taylor		Kalispell	MT
Mr. Patrick W. Taylor		Kalispell	MT
Martin E. Tellier		Imperial Beach	CA
Larry Thompson & Others		Kalispell	MT
Mr. A. R. Trenkle		East Glacier	MT
Mr. Thomas C. Tripplet		Eastside	OR
Mr. Gerald Turner		Kalispell	MT
Mr. Jess Underwood		Whitefish	MT
Mr. Bayard R. Van Gieson		Missoula	MT
Mr. John Vukonich		Fortine	MT
Douglas & Peggy Wanger		Hungry Horse	MT
Joe Washington		Eureka	CA
Mr. Ira S. Weaver		Kalispell	MT
Mr. George F. Weyermann		Portland	OR
Peter Weyler	& Jen Wick	Philadelphia	PA
Anne Wheeler		West Glacier	MT
Mr. Art White		Kalispell	MT
Mr. Tom White		Stryker	MT
Mr. Arthur B. Whitney		Bigfork	MT
Lin Wilkerson		Columbia Falls	MT
Doug Wilson		Kalispell	MT
Mr. Charles Wingard		Kalispell	MT
Mr. James F. Wood		Bigfork	MT
Mr. Wayne Worthington		Kalispell	MT

GROUP CATEGORY = MEDIA

	Fairfield Times	Fairfield	MT
Rich Stripp, Editor	Flathead Courier	Polson	MT
	Glacier Reporter	Browning	MT
J. M. Olinger, Pub/ Ed	Headwaters Journal	West Glacier	MT
Barry Morris	KJJR Radio	Whitefish	MT
	Mission Valley News	St. Ignatius	MT

LIST OF PREPARERS

NAME	FOREST ORGANIZATION POSITION OR AREA OF CONTRIBUTION	QUALIFICATIONS	YEARS OF EXPERIENCE
LINE AND STAFF OFFICERS			
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Mary Peterson	Deputy Forest Supervisor	B.S. Forest Resources	15
Bill Pederson	Swan Lake District Ranger	B.S. Forestry	25
Greg Warren	Spotted Bear District Ranger	B.S. Wildlife Biology/M.S. Wildland Rec. Mgmt	13
Al Christophersen	Hungry Horse District Ranger	B.S. & M.S. Forest Management	18
Tom Hope	Glacier View District Ranger	B.S. Forest Management	27
Bert Stout	Tally Lake District Ranger	B.S. Forest Management	26
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Bob Hensler	Planning Staff Officer	M.S. Wildlife Management	32
Lloyd Reesman	Recreation Staff Officer	B.S. Forestry	30
CORE I.D. TEAM MEMBERS			
Tom Wittinger	Forest Wildlife Staff Officer	B.S. & M.S. Wildlife Biology	12
Chuck Snyder	Forest Roads Engineer	B.S. Civil Engineering	26
Paul Conrad	Planning Forester	M.S. Botany/Range Mgmt	29
Warren Williamson	Forest Recreation Staff Assistant	B.S. Forestry	31
SPECIALISTS CONTRIBUTING DATA			
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Henry Rivera	H.H./S.B. District Wildlife Biologist	B.S. Wildlife Management	12
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Clarence Taber	G.V. District Road Manager	Engineering Techncn	25
Ken Hinzman	H.H./S.B. District Road Manager	Engineering Techncn	19
Bill Stine	S.L. District Road Manager	Engineering Techncn	28
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Don Krogstad	Manager of Forest Graphic Information	Cartographic Techncn	20
Jim Reid	GIS/GPS Remote Sensing Specialist	Cartographic Techncn	20
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Vangie Wolfe	Computer Programmer	A.S. Computer Info. Systems	8
WRITING & EDITING ASSISTANCE			
Mike Conner	Acting Forest Public Affairs Officer	B.S. Forest Management	27
Royelynn Warren	Acting Forest Public Affairs Assistant	A.D. Computer Programming	13
Teresa Falcon	Business Management	Clerk/Typist	10

APPENDIX A

PROPOSED AMENDMENT NO. 10

APPENDIX A

PROPOSED AMENDMENT NO. 10

The LRMP will be amended as follows:

■ Page II-30

Replace standard (16) with the following:

(16) Within Management Situation 1 and 2, project scheduling and road management will be planned and implemented on the basis of the 5,000 to 15,000 acre Bear Management Areas (BMA) shown on maps in Appendix C. A security area will be provided along with other appropriate mitigation for site-specific project impacts. An adjacent BMA will be considered a security area provided there are no active projects in the area and the average Open Road Density (ORD) is managed as shown in Table II-6.

The standards in Table II-6 will not apply to the BMA containing a project during the time the project is active. Appropriate site-specific mitigation for projects will be determined during site-specific project analysis. During project activity, a site-specific road management plan for the area will be implemented as planned in the project analysis.

The ORD standard and its application is considered programmatic. Site-specific variance of these standards may be necessary over time, based on site-specific information for any BMA. Any adjustment raising or lowering the ORD for a BMA will require consultation with the U.S. Fish and Wildlife Service and a site-specific amendment to the LRMP. Site-specific analysis shall be completed prior to issuing a site-specific amendment. The primary site-specific factors that will form the basis for an ORD variance will be:

- Unusual road configuration, such as a road being the boundary of the BMA or parallel roading situations.
- Specific habitat information that would provide a reliable prediction of the absence or presence of grizzly bear during a specific time period, and/or the value of the habitat to grizzly bear.
- Site-specific studies that verify the absence or presence of grizzly bear during a specific time period.

The boundaries of the BMA's and RDA's shown on the maps in Appendix C are subject to minor adjustments based on site-specific analysis.

Refer to Section E of Appendix C for definitions and process related to calculation of Open Road Density.

[The maps, which will be prepared and included in Appendix C in the Final Environmental Impact Statement, will show the BMA's similar to the maps included in this Draft Environmental Impact Statement, but without road restriction information.]

■ Page II-55

Table II-6 on page II-55 is replaced with the following Table II-6:

TABLE II-6. Open Road Density Standards for Bear Management Areas and Geographic Units, Flathead National Forest §

RANGER DISTRICTS	OPEN ROAD DENSITY STANDARD (April 1 - November 30)	
BEAR MANAGEMENT AREAS ‡	1 mi/mi^2	2 mi/mi^2
Swan Lake District		
HGHS A9	X	
SLVN A2, A5, A7, A9, A10, A11, and A12	X	
NMSA A7 and A8	X	
BNKR A1, A2, A3, A4, A5, A6, A7, and A8	X	
SMSR A1, A2, A3, A4, A5, and A6	X	
SMSR B1, B2, B3, B4, B5, and B6	X	
BGSM A1, A2, A3, A4, A5, A6, A7, and A8	X	
NMSR A1, A2, A3, A4, A5, and A6		X
Spotted Bear District		
SLVN C1, C2, C3, C4, C5, and C6	X	
SLVN D1 and D2	X	
BNKR B1, B2, B3, B4, B5, B6, B7, B8, B9, and B10	X	
Hungry Horse District		
HGHS A1, A2, A3, A4, A5, A6, and A7	X	
SLVN B1, B2, and B3	X	
HGHS B2, B3, B5, B6, and B7	X	
HGHS C1, C2, C3, C4, and C5	X	
SLVN D1	X	
LMFF A1,A2, A3, and A4	X	
UMFF A1, A2, A3, A4 and A5	X	
HGHS B1 and B4		X
Glacier View District		
UNFF A1, A2, A3, A4, and A5	X	
UNFF B1, B2, B3, B4, B5, B6, B7, B8, B9, and B10	X	
UNFF C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, and C12	X	
LNFF A1, A2, A3, A4, A5, A6, A7, A8, A9, and A10	X	
LNFF A11, A12, and A13		X
Tally Lake District		
STRA A1 and A2	X	

RANGER DISTRICTS	OPEN ROAD DENSITY STANDARD (mi/mi^2)		
GEOGRAPHIC UNIT ●	1.3 - 1.8	1.8 - 2.2	2.0 - 3.2
Swan Lake Ranger District			
Island Unit			X
Tally Lake Ranger District			
Olney-Martin Creek	X		
Upper good Creek	X		
Sylvia Lake	X		
Star Meadow-Logan Creek		X	
Tally Lake-Round Meadow		X	
Mountain Meadow-Rhodes Draw		X	
Upper Griffin			X
Ashley Lake			X

§ See Appendix C, Section E for definitions and process for calculating and implementing Open Road Density standards.

‡ As delineated on maps in Appendix C for designated grizzly bear habitat. These ORD standards will ultimately be superseded by the Cumulative Effects Model (CEM) when it becomes operational. Reference the U.S. Fish and Wildlife Service's May 15, 1985 biological opinion on the LRMP.

● The Geographic Units are as shown on maps in Appendix C for undesignated grizzly bear habitat. These Geographic Units are also subdivided into 5,000 to 15,000 acre Road Density Areas (RDA's) for project analysis purposes, however the Open Road Density standard applies to Geographic Units. Open Road Density within some RDA's may exceed the standard for the Geographic Unit. In some instances, the boundaries of RDA's do not coincide with Geographic Unit boundaries.

- Page V-15

Add monitoring items 3 and 4 to monitoring item #54 page V-15.

Item No.	Resource Unit of Measure	MIH Code	Evaluation Objectives for Outputs, Issues, & Manegement Concerns	Action/Effects or Resources to be Measured	Data Source	* Accuracy	Monitor Frequency	Report Period	Comments on Variability & Trends
54	Facilities	L19							
	3. Vehicles per week		Monitor the amount of vehicle use on open system roads	Actual use level	Traffic counters and observations	2	Continuous random samples	Annual	
	4. Vehicles per week		Monitor the amount of use occurring on restricted roads	Actual use levels	Traffic counters and observations	2	Continuous random samples	Annual	

- Appendix C

The following section is added to the end of Appendix C, page number C-7:

E. Definitions and process related to average open road density.

Definitions:

Road -

For application of the open road density standard a road is defined as - a route, constructed or evolved, more than 300 feet in length that is reasonably and prudently driveable with a conventional passenger car or pickup.

Open road -

For application of the open road density standard an open road is defined as - a route that is reasonably or prudently driveable by a conventional passenger car or pickup and is not obstructed by a physical barrier or has no administrative restriction. If motorized vehicle use levels exceed five (5) vehicles per week, a road is considered open.

Area -

The gross areas used to calculate Open Road Density in Grizzly Bear Management Situation 1 and 2 will be those shown on the attached maps. These areas are subject to minor adjustment based on site-specific analysis.

The gross areas used to calculate Open Road Density in areas other than MS-1 and MS-2 on the Forest will be the "Geographic Unit". These units have been broken into 5,000 to 15,000 acre units for project analysis purposes.

Process -

The ORD referred to in Table II-6 and Standard (16) on page II-30 will be calculated by dividing the number of square miles of State of Montana, private industrial, and National Forest System land within a BMA or RDA by the miles of open road in the area. Small tracts of land held in private ownership, administrative sites, and developed recreation site roads and areas will not be included in ORD calculations.

APPENDIX B

TABLES AND FIGURES
NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON NATIONAL FOREST SYSTEM LAND

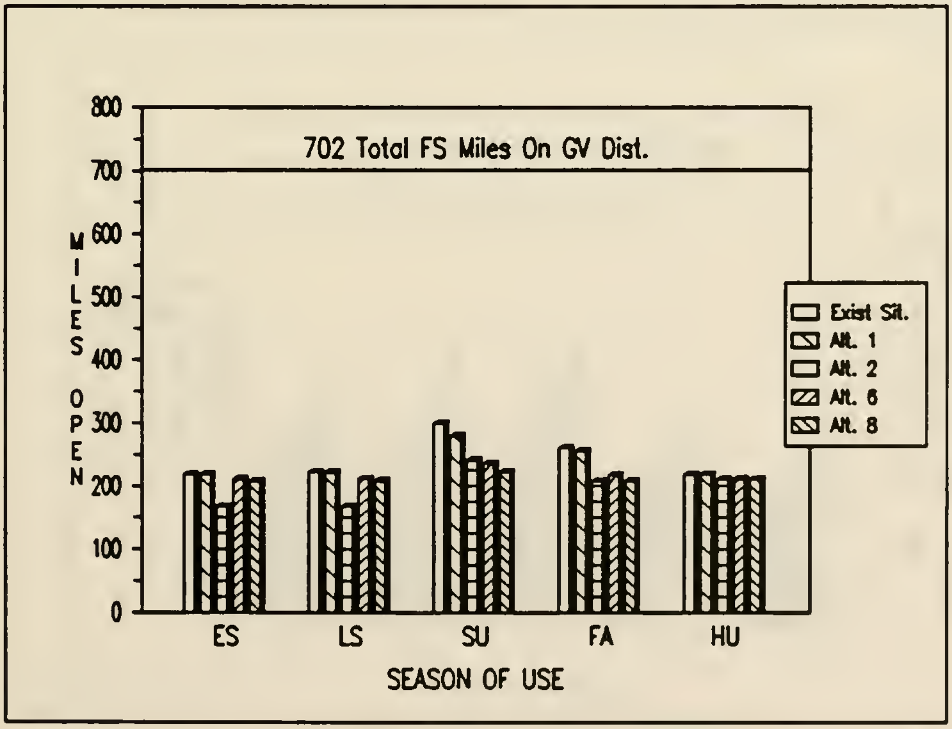
NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-1 **GLACIER VIEW DISTRICT**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	219	219 (-0)	168 (-51)	212 (-7)	208 (-11)
Late Spring (LS) 5/15 - 6/30	222	222 (-0)	168 (-54)	212 (-10)	209 (-13)
Summer (SU) 7/1 - 8/31	300	280 (-20)	241 (-59)	236 (-64)	222 (-78)
Fall (FA) 9/1 - 10/14	261	256 (-5)	208 (-53)	218 (-43)	208 (-53)
Hunting (HU) 10/15 - 11/30	219	219 (-0)	211 (-8)	212 (-7)	211 (-8)

FIGURE B-1



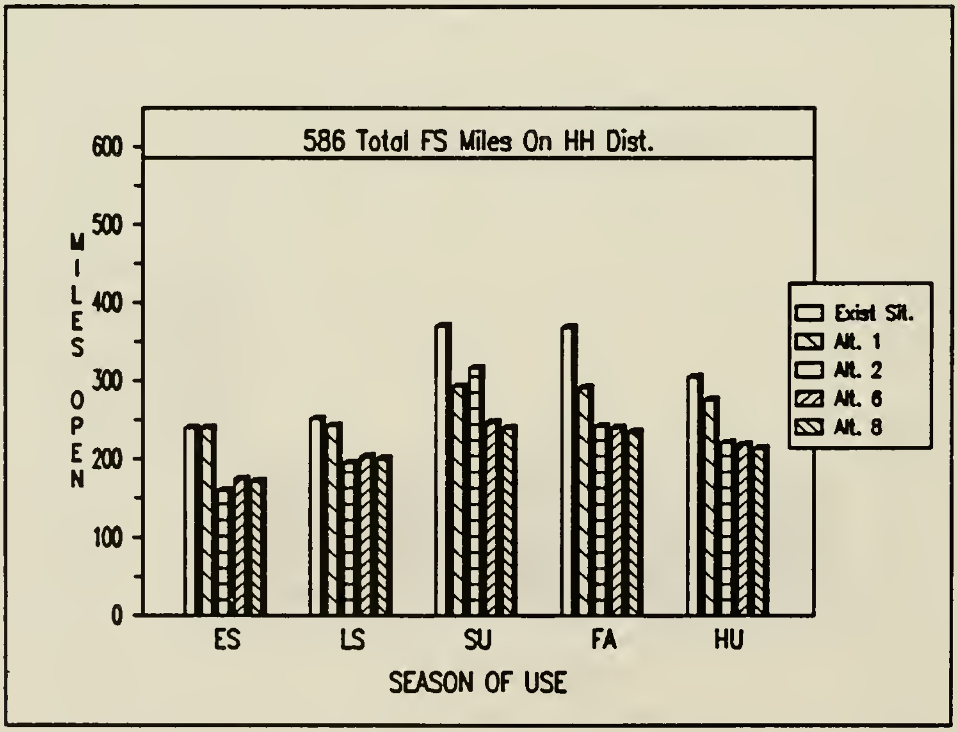
NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-2 **HUNGRY HORSE DISTRICT**

	ALTERNATIVE				
Season of Use of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	240	240 (-0)	160 (-80)	175 (-65)	171 (-69)
Late Spring (LS) 5/15 - 6/30	252	243 (-9)	195 (-57)	203 (-49)	200 (-52)
Summer (SU) 7/1 - 8/31	370	293 (-77)	317 (-53)	247 (-123)	240 (-130)
Fall (FA) 9/1 - 10/14	368	291 (-77)	242 (-126)	240 (-128)	235 (-133)
Hunting (HU) 10/15 - 11/30	305	276 (-29)	221 (-84)	219 (-86)	214 (-91)

FIGURE B-2



NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

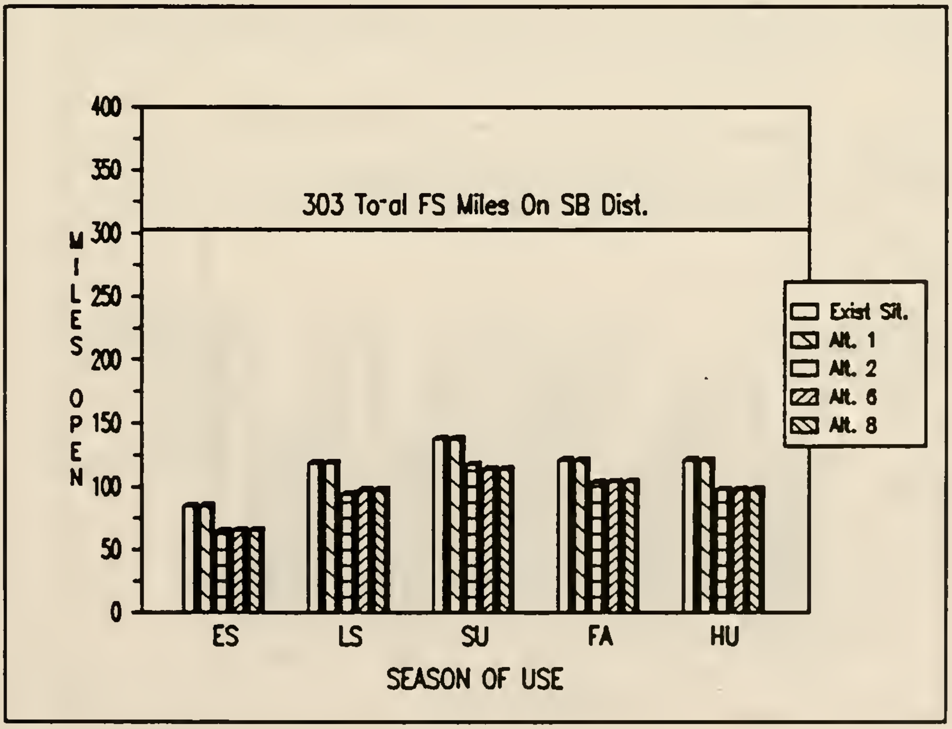
(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-3

SPOTTED BEAR DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	85	85 (-0)	65 (-20)	65 (-20)	65 (-20)
Late Spring (LS) 5/15 - 6/30	119	119 (-0)	94 (-25)	98 (-21)	98 (-21)
Summer (SU) 7/1 - 8/31	138	138 (-0)	117 (-21)	114 (-24)	114 (-24)
Fall (FA) 9/1 - 10/14	121	121 (-0)	104 (-17)	104 (-17)	104 (-17)
Hunting (HU) 10/15 - 11/30	121	121 (-0)	98 (-23)	98 (-23)	98 (-23)

FIGURE B-3



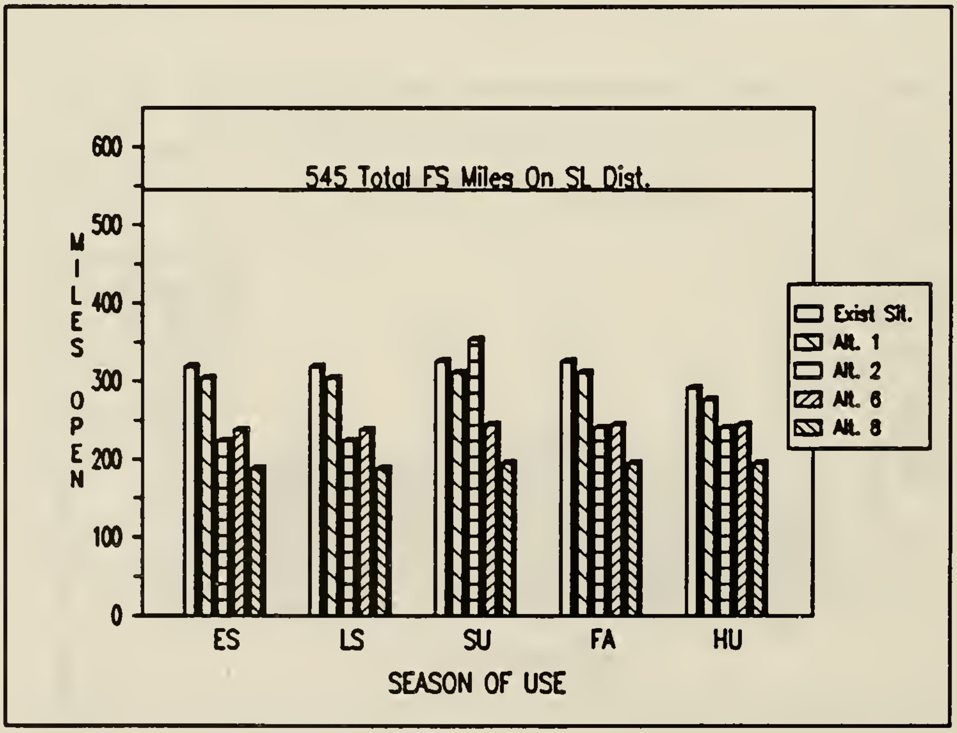
NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-4 SWAN LAKE DISTRICT, (SWAN UNIT)

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	319	304 (-15)	224 (-95)	238 (-81)	188 (-131)
Late Spring (LS) 5/15 - 6/30	319	304 (-15)	234 (-85)	238 (-81)	188 (-131)
Summer (SU) 7/1 - 8/31	326	311 (-15)	354 (+28)	245 (-81)	195 (-131)
Fall (FA) 9/1 - 10/14	326	311 (-15)	241 (-85)	245 (-81)	195 (-131)
Hunting (HU) 10/15 - 11/30	291	277 (-14)	241 (-50)	245 (-46)	195 (-96)

FIGURE B-4



NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

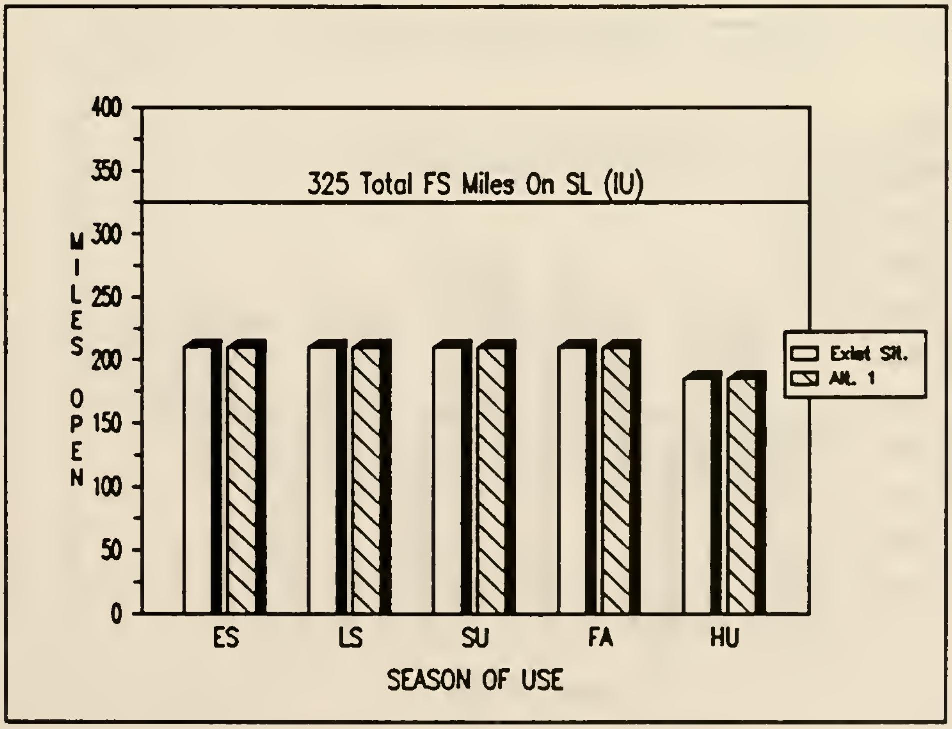
(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-5 SWAN LAKE DISTRICT, (ISLAND UNIT)

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	210	210 (-0)	#	#	#
Late Spring (LS) 5/15 - 6/30	210	210 (-0)	#	#	#
Summer (SU) 7/1 - 8/31	210	210 (-0)	#	#	#
Fall (FA) 9/1 - 10/14	210	210 (-0)	#	#	#
Hunting (HU) 10/15 - 11/30	185	185 (-0)	#	#	#

# Alternatives not applicable. Assumed same value as existing situation for making Forest totals.

FIGURE B-5



NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

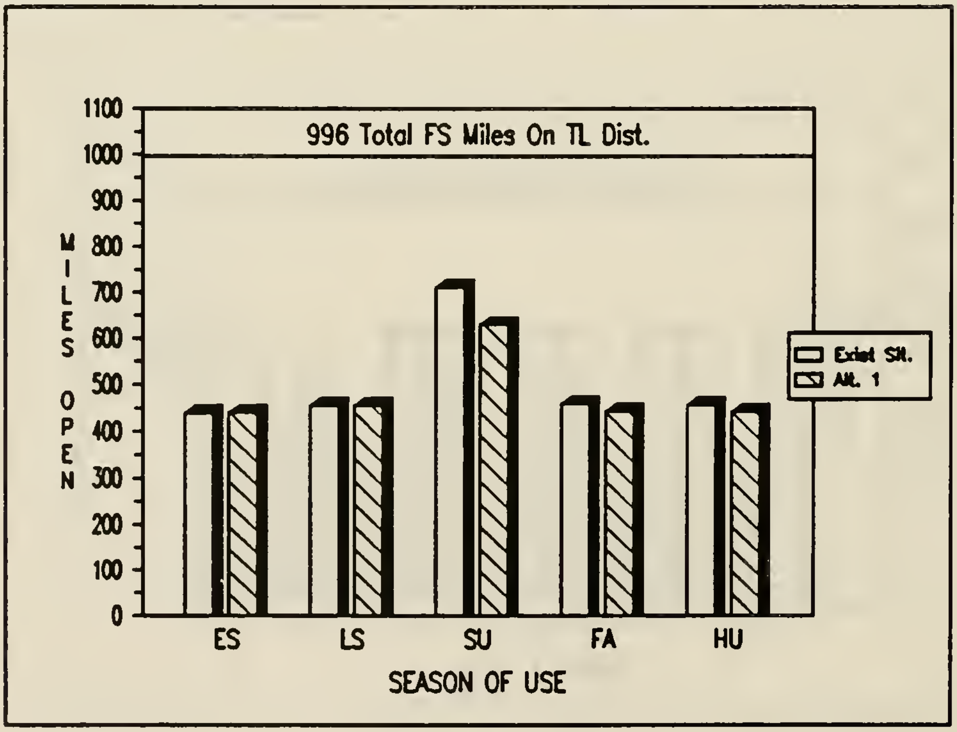
(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-6 **TALLY LAKE DISTRICT**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	440	440 (-0)	#	#	#
Late Spring (LS) 5/15 - 6/30	455	455 (-0)	#	#	#
Summer (SU) 7/1 - 8/31	711	630 (-81)	#	#	#
Fall (FA) 9/1 - 10/14	458	443 (-15)	#	#	#
Hunting (HU) 10/15 - 11/30	457	442 (-15	#	#	#

# Alternative not applicable.Assumed same value as existing situation for making Forest totals.

FIGURE B-6



NATIONAL FOREST SYSTEM ROAD MILES OPEN TO MOTORIZED USE ON FLATHEAD NATIONAL FOREST SYSTEM LAND ONLY

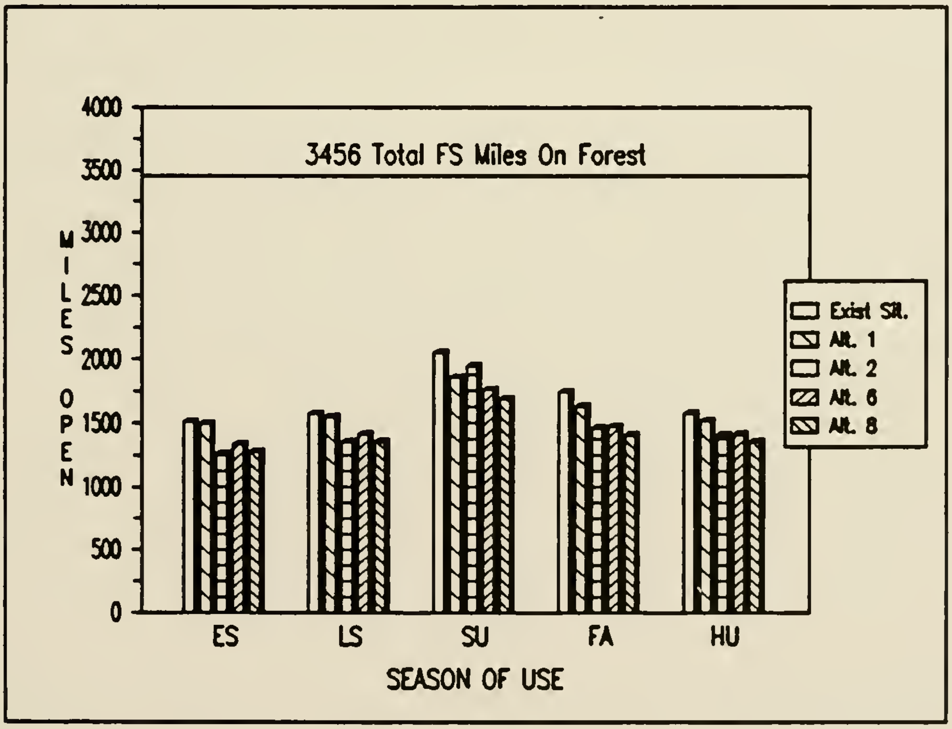
(VALUE IN PARENTHESIS IS THE CHANGE FROM EXISTING SITUATION)

TABLE B-7

TOTAL FOREST

	ALTERNATIVE				
Season of Use	Existing Situation	Alt.1	Alt.2	Alt.6	Alt.8
Early Spring (ES) 4/1 - 5/14	1513	1498 (-15)	1267 (-246)	1340 (-173)	1282 (-231)
Late Spring (LS) 5/15 - 6/30	1577	1553 (-24)	1356 (-221)	1416 (-161)	1360 (-217)
Summer (SU) 7/1 - 8/31	2055	1862 (-193)	1950 (-105)	1763 (-292)	1692 (-363)
Fall (FA) 9/1 - 10/14	1744	1632 (-112)	1463 (-281)	1475 (-269)	1410 (-334)
Hunting (HU) 10/15 - 11/30	1578	1520 (-58)	1413 (-165)	1416 (-162)	1360 (-218)

FIGURE B-7



APPENDIX C

TABLES AND FIGURES
EFFECTS TO PUBLIC MOTORIZED USE

EFFECTS TO PUBLIC MOTORIZED USE

TABLE C-1 GLACIER VIEW DISTRICT

User Type	Existing Situation (1000 mile days)	Percent change relative to the existing situation			
		Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	7	-0%	-29%	-14%	-14%
Recreation Drvr (RD)	52	-0%	-17%	-13%	-15%
Fisherman (F)	40	-0%	-20%	-15%	-17%
Woodcutter (WC)	52	-0%	-17%	-13%	-15%
Berry Picker (BP)	18	-0%	-19%	-22%	-22%
Fall Hunter (FH)	20	-0%	-13%	-11%	-13%

FIGURE C-1 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.

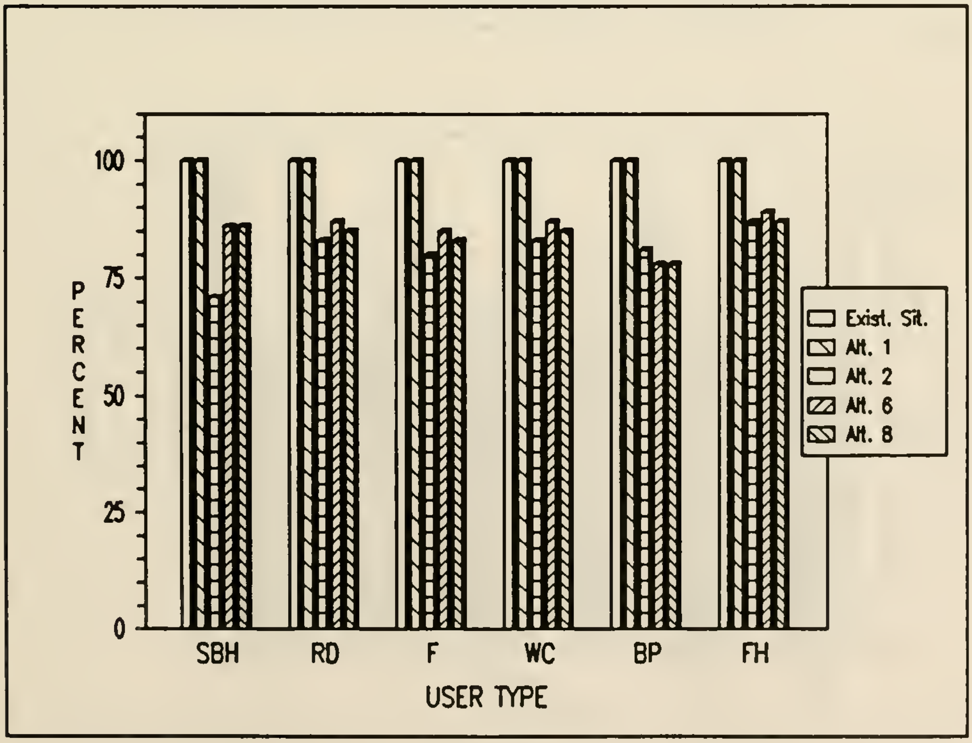


TABLE C-2 HUNGRY HORSE DISTRICT

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	8	-0%	-25%	-25%	-25%
Recreation Drvr (RD)	66	-13%	-23%	-29%	-29%
Fisherman (F)	51	-16%	-24%	-31%	-33%
Woodcutter (WC)	66	-13%	-23%	-29%	-30%
Berry Picker (BP)	23	-22%	-17%	-35%	-35%
Fall Hunter (FH)	28	-4%	-32%	-32%	-32%

FIGURE C-2 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.

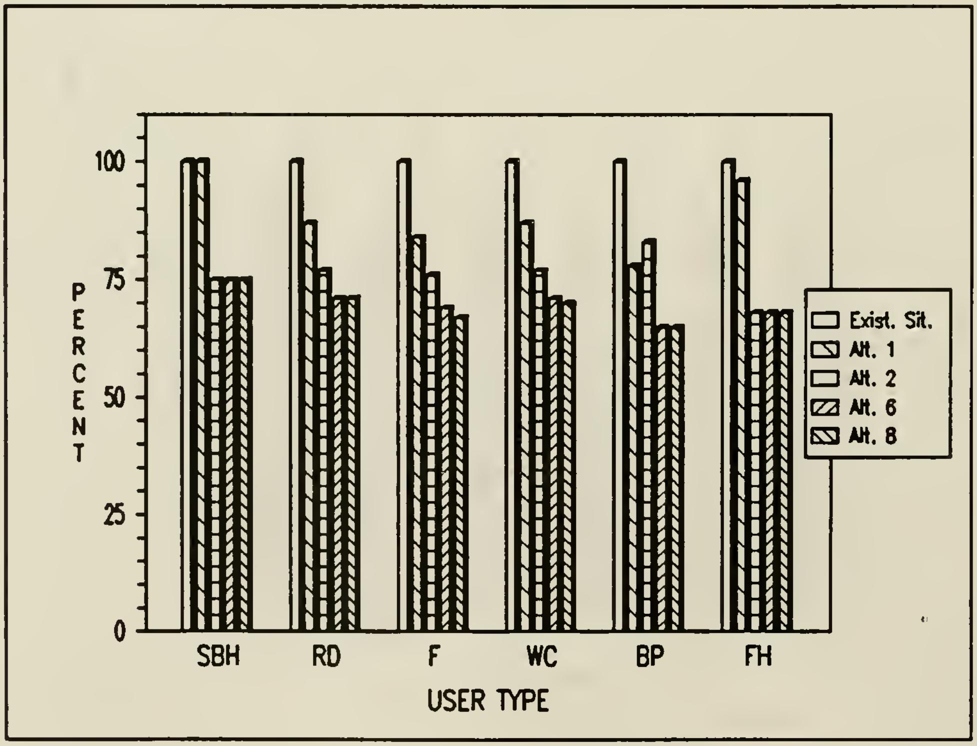
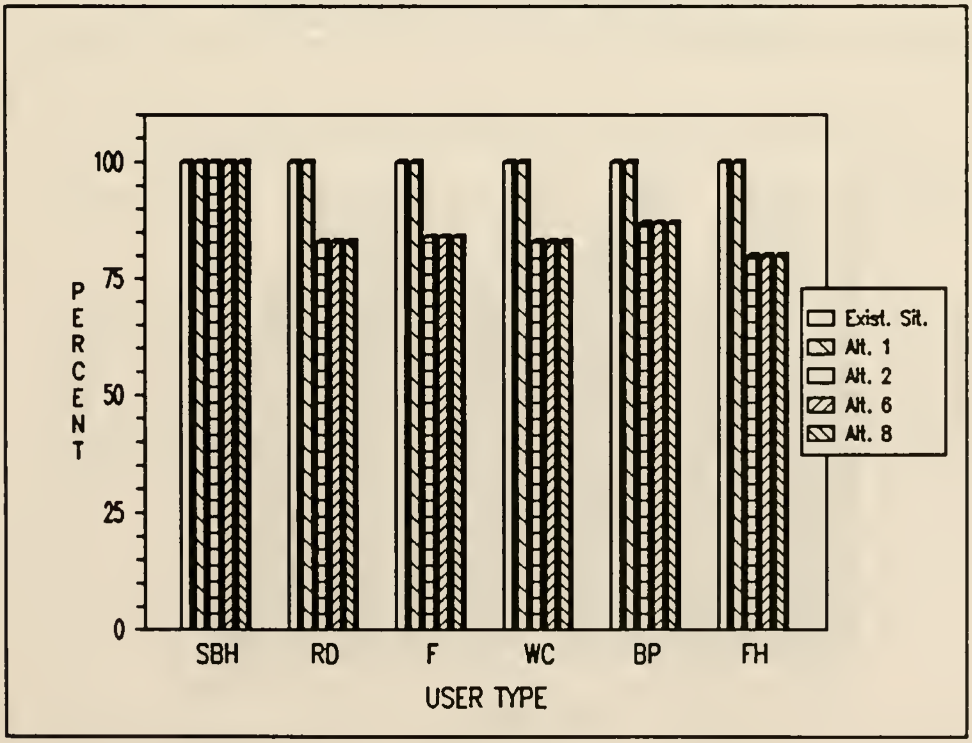


TABLE C-3 SPOTTED BEAR DISTRICT

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	1	0%	-0%	-0%	-0%
Recreation Drvr (RD)	23	-0%	-17%	-17%	-17%
Fisherman (F)	19	-0%	-16%	-16%	-16%
Woodcutter (WC)	23	-0%	-17%	-17%	-17%
Berry Picker (BP)	8	-0%	-13%	-13%	-13%
Fall Hunter (FH)	10	-0%	-20%	-20%	-20%

FIGURE C-3 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.



EFFECTS TO PUBLIC MOTORIZED USE

TABLE C-4 SWAN LAKE DISTRICT, (SWAN UNIT)

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	10	-3%	-30%	-33%	-40%
Recreation Drvr (RD)	65	-5%	-25%	-23%	-38%
Fisherman (F)	49	-4%	-12%	-24%	-41%
Woodcutter (WC)	65	-5%	-25%	-23%	-38%
Berry Picker (BP)	20	-5%	-0%	-25%	-40%
Fall Hunter (FH)	26	-2%	-23%	-23%	-38%

FIGURE C-4 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.

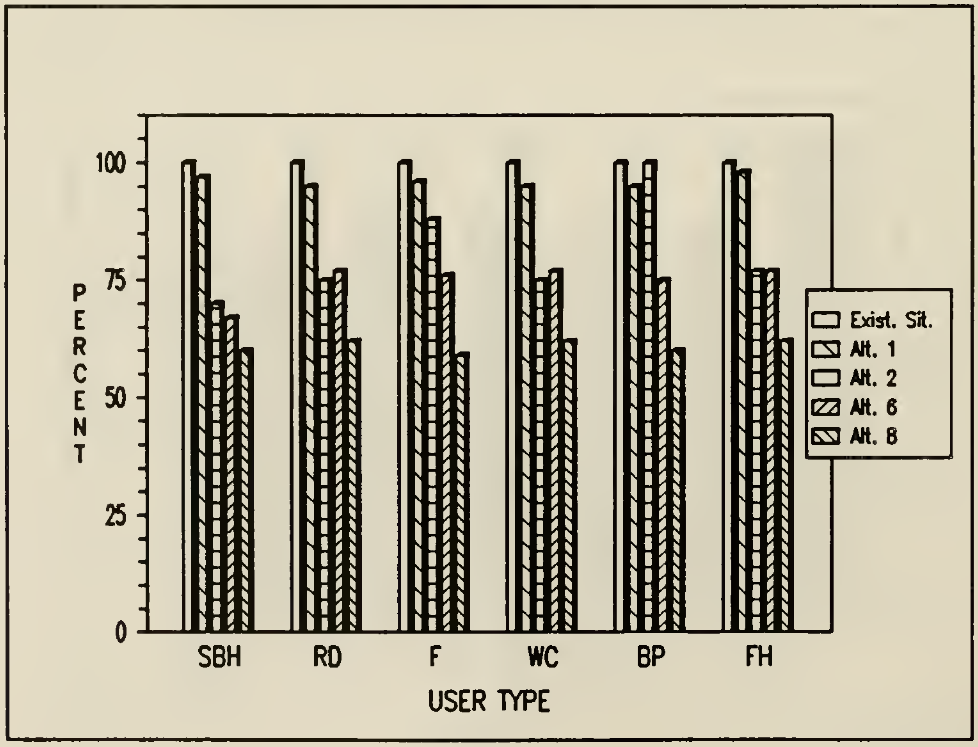
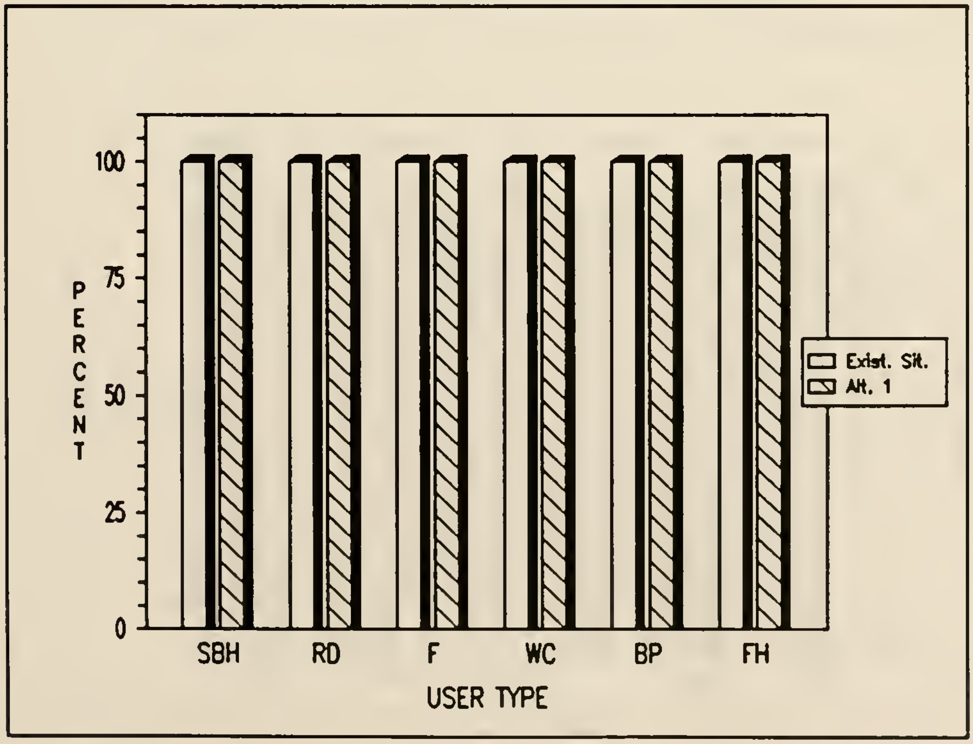


TABLE C-5 SWAN LAKE DISTRICT, (ISLAND UNIT)

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	7	-0%	#	#	#
Recreation Drvr (RD)	48	-0%	#	#	#
Fisherman (F)	33	-0%	#	#	#
Woodcutter (WC)	48	-0%	#	#	#
Berry Picker (BP)	13	-0%	#	#	#
Fall Hunter (FH)	17	-0%	#	#	#

Alternatives not applicable. Assumed same value as existing situation for making Forest totals.

FIGURE C-5 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.



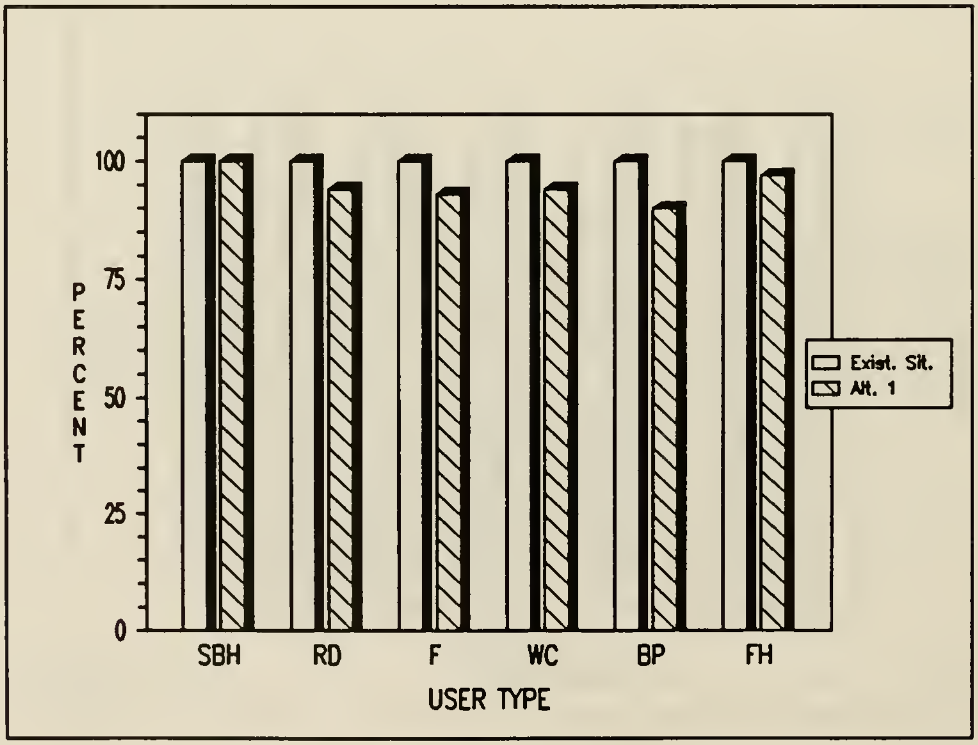
EFFECTS TO PUBLIC MOTORIZED USE

TABLE C-6 **TALLY LAKE DISTRICT**

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	13	-0%	#	#	#
Recreation Drvr (RD)	108	-6%	#	#	#
Fisherman (F)	85	-7%	#	#	#
Woodcutter (WC)	108	-6%	#	#	#
Berry Picker (BP)	39	-10%	#	#	#
Fall Hunter (FH)	38	-3%	#	#	#

Alternatives not applicable. Assumed same value es existing situetion for making Forest totals.

FIGURE C-6 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.

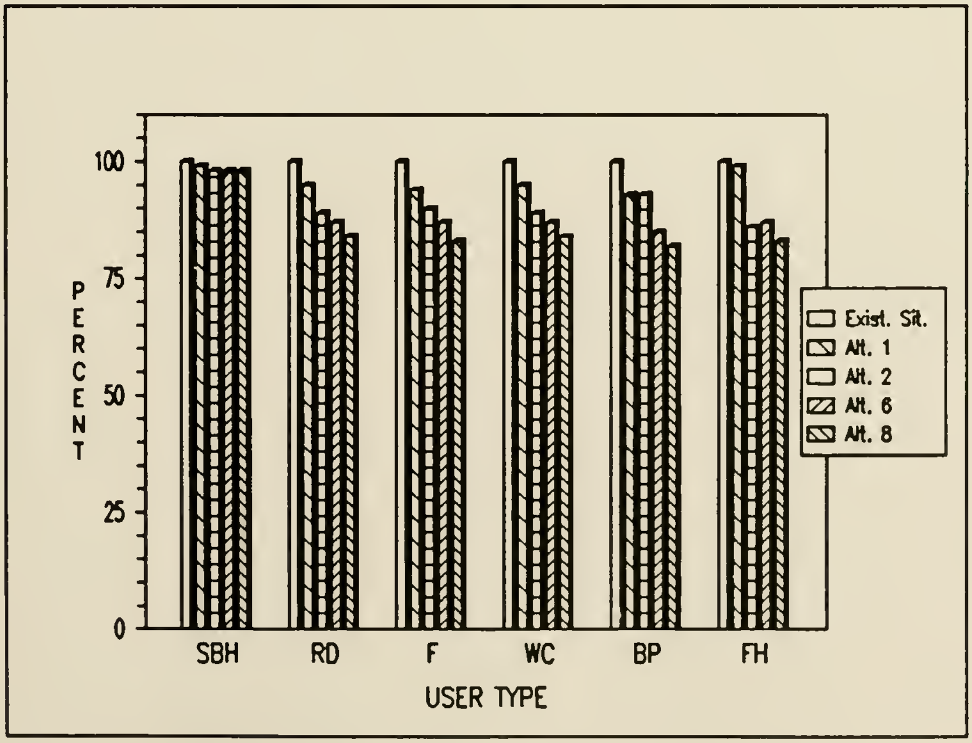


EFFECTS TO PUBLIC MOTORIZED USE

TABLE C-7 TOTAL FOREST

		Percent change relative to the existing situation			
User Type	Existing Situation (1000 mile days)	Alt. 1	Alt. 2	Alt. 6	Alt. 8
Spring Br Hunter (SBH)	46	-1%	-2%	-2%	-2%
Recreation Drvr (RD)	362	-5%	-11%	-13%	-16%
Fisherman (F)	277	-6%	-10%	-13%	-17%
Woodcutter (WC)	362	-5%	-11%	-13%	-16%
Berry Picker (BP)	121	-7%	-7%	-15%	-18%
Fall Hunter (FH)	139	-1%	-14%	-13%	-17%

FIGURE C-7 PERCENT OF PUBLIC MOTORIZED USE AVAILABLE, RELATIVE TO EXISTING SITUATION.



APPENDIX D

TABLES AND FIGURES
RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MANAGEMENT SITUATION ONE (MS-1) AND MANAGEMENT SITUATION TWO (MS-2) CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE: AND HIGHWAYS

RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 40 Bear Management Areas (BMA)

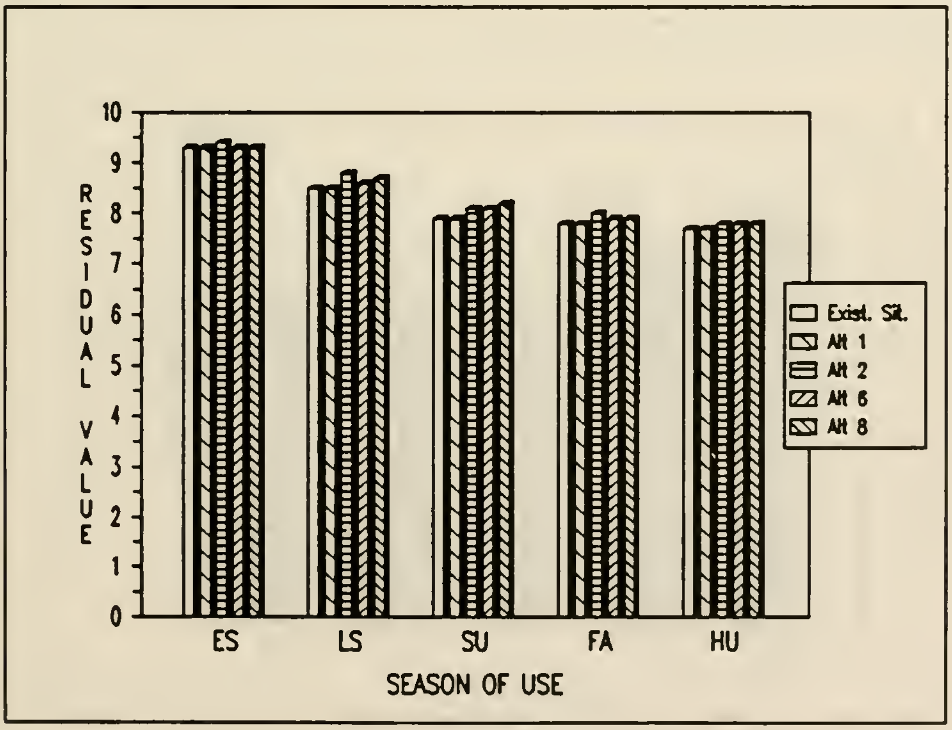
TABLE D-1

GLACIER VIEW DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.3	9.3	9.4	9.3	9.3
Late Spring (LS) 5/15 - 6/30	8.5	8.5	8.8	8.6	8.7
Summer(SU) 7/1 - 8/31	7.9	7.9	8.1	8.1	8.2
Fall (FA) 9/1 - 10/14	7.8	7.8	8.0	7.9	7.9
Hunting (HU) 10/15 - 11/30	7.7	7.7	7.8	7.8	7.8

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-1



RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 32 Bear Management Areas (BMA)

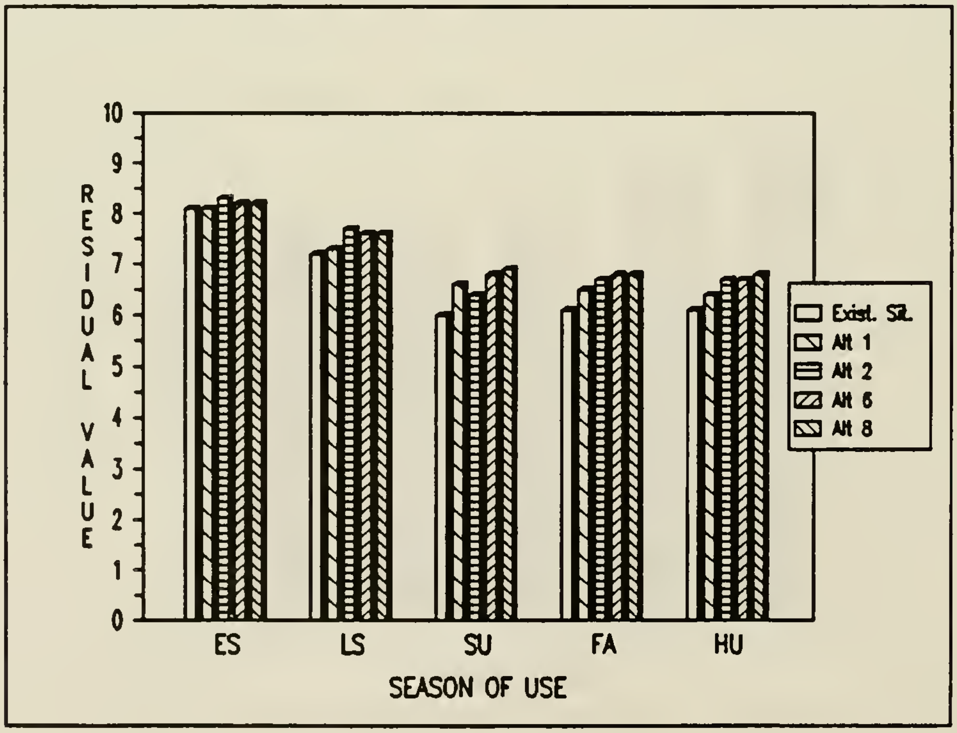
TABLE D-2

HUNGRY HORSE DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.1	8.1	8.3	8.2	8.2
Late Spring (LS) 5/15 - 6/30	7.2	7.3	7.7	7.6	7.6
Summer(SU) 7/1 - 8/31	6.0	6.6	6.4	6.8	6.9
Fall (FA) 9/1 - 10/14	6.1	6.5	6.7	6.8	6.8
Hunting (HU) 10/15 - 11/30	6.1	6.4	6.7	6.7	6.8

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-2



RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 18 Bear Management Areas (BMA)

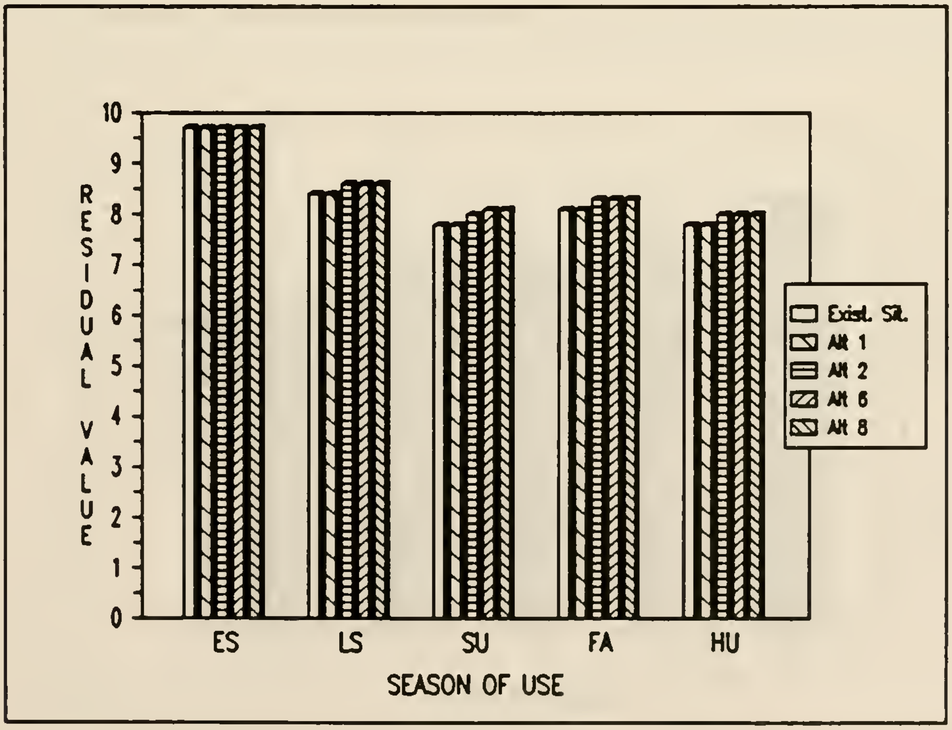
TABLE D-3

SPOTTED BEAR RANGER DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.7	9.7	9.7	9.7	9.7
Late Spring (LS) 5/15 - 6/30	8.4	8.4	8.6	8.6	8.6
Summer(SU) 7/1 - 8/31	7.8	7.8	8.0	8.1	8.1
Fall (FA) 9/1 - 10/14	8.1	8.1	8.3	8.3	8.3
Hunting (HU) 10/15 - 11/30	7.8	7.8	8.0	8.0	8.0

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-3



RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

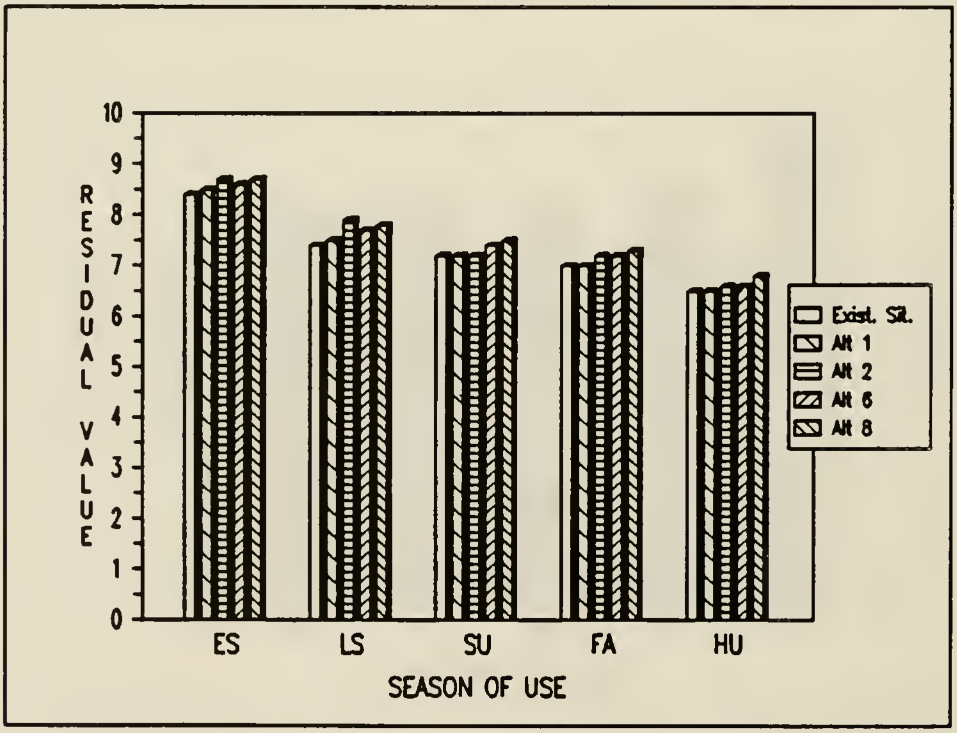
Average of 45 Bear Management Areas (BMA)

TABLE D-4 **SWAN LAKE DISTRICT, (SWAN UNIT)**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.4	8.5	8.7	8.6	8.7
Late Spring (LS) 5/15 - 6/30	7.4	7.5	7.9	7.7	7.8
Summer(SU) 7/1 - 8/31	7.2	7.2	7.2	7.4	7.5
Fall (FA) 9/1 - 10/14	7.0	7.0	7.2	7.2	7.3
Hunting (HU) 10/15 - 11/30	6.5	6.5	6.6	6.6	6.8

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-4



RESIDUAL IMPACT VALUES FOR DESIGNATED GRIZZLY BEAR HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

TABLE D-5 **SWAN LAKE DISTRICT, (ISLAND UNIT)**

FIGURE D-5

THERE IS NO OCCUPIED GRIZZLY BEAR HABITAT IN THE SWAN LAKE DISTRICT, (ISLAND UNIT).

RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 2 Bear Management Areas (BMA)

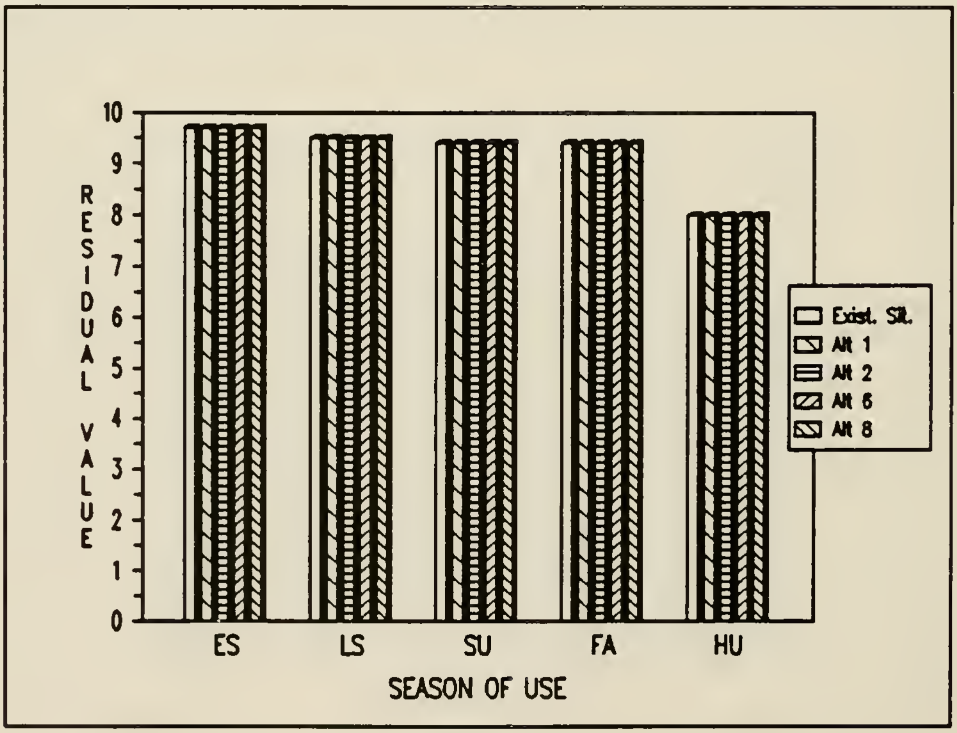
TABLE D-6

TALLY LAKE DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.7	9.7	9.7	9.7	9.7
Late Spring (LS) 5/15 - 6/30	9.5	9.5	9.5	9.5	9.5
Summer(SU) 7/1 - 8/31	9.4	9.4	9.4	9.4	9.4
Fall (FA) 9/1 - 10/14	9.4	9.4	9.4	9.4	9.4
Hunting (HU) 10/15 - 11/30	8.0	8.0	8.0	8.0	8.0

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-6



RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

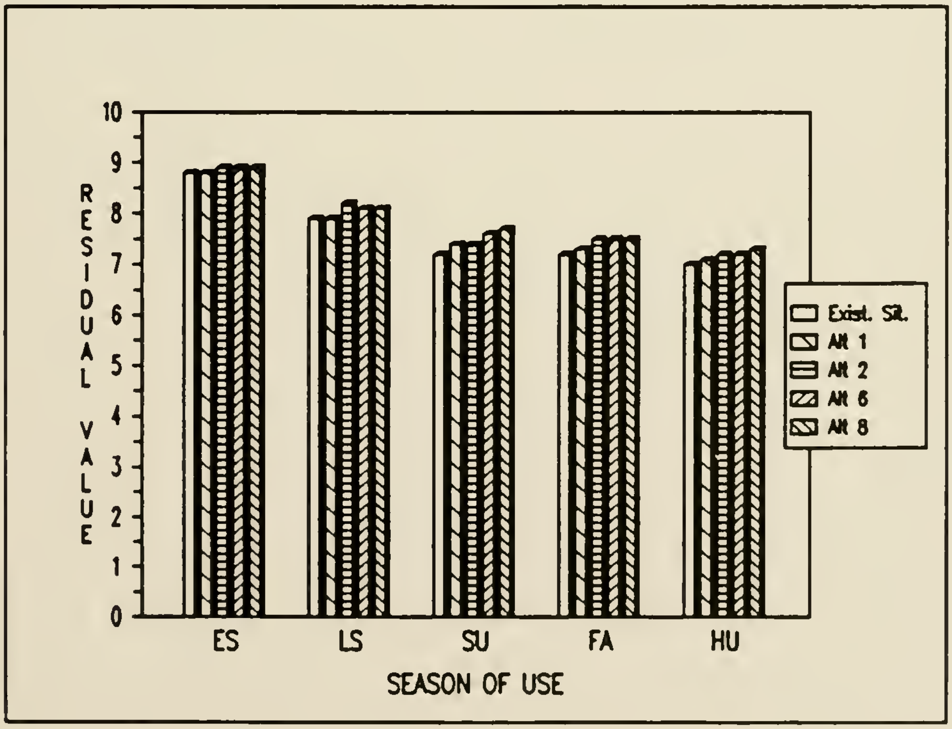
Average of 137 Bear Management Areas (BMA)

TABLE D-7 **TOTAL FOREST**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.8	8.8	8.9	8.9	8.9
Late Spring (LS) 5/15 - 6/30	7.9	7.9	8.2	8.1	8.1
Summer(SU) 7/1 - 8/31	7.2	7.4	7.4	7.6	7.7
Fall (FA) 9/1 - 10/14	7.2	7.3	7.5	7.5	7.5
Hunting (HU) 10/15 - 11/30	7.0	7.1	7.2	7.2	7.3

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE D-7



APPENDIX E

TABLES AND FIGURES
RESIDUAL IMPACT VALUES FOR GRIZZLY BEAR MANAGEMENT SITUATION ONE (MS-1) AND MANAGEMENT SITUATION TWO (MS-2) CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

Average of 40 Bear Management Areas (BMA)

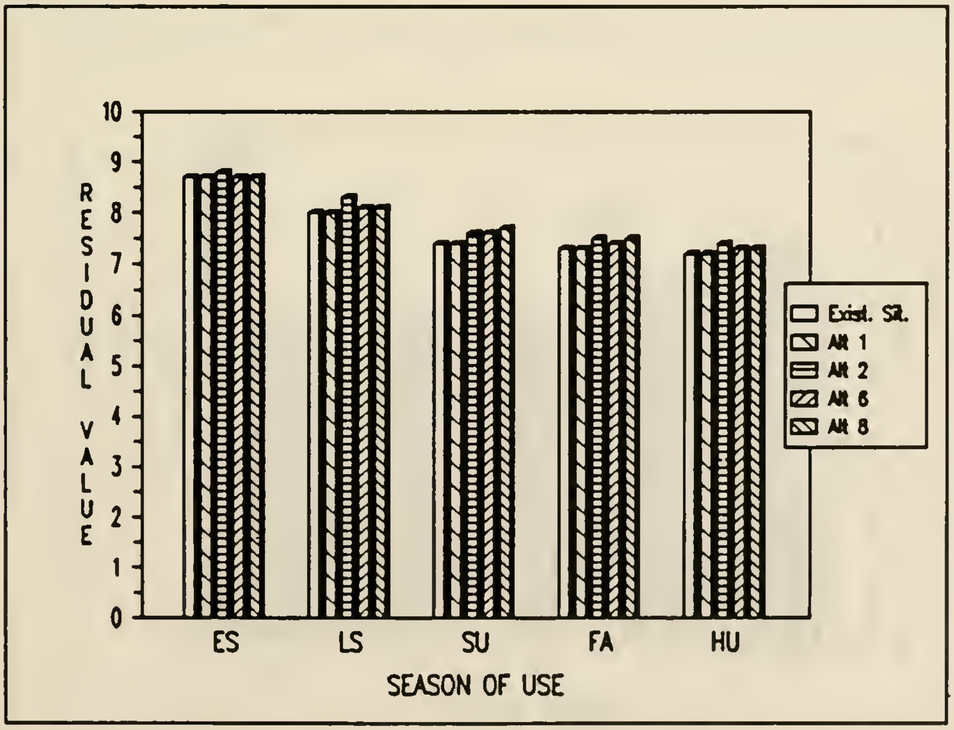
TABLE E-1

GLACIER VIEW DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situataion	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.7	8.7	8.8	8.7	8.7
Late Spring (LS) 5/15 - 6/30	8.0	8.0	8.3	8.1	8.1
Summer(SU) 7/1 - 8/31	7.4	7.4	7.6	7.6	7.7
Fall (FA) 9/1 - 10/14	7.3	7.3	7.5	7.4	7.5
Hunting (HU) 10/15 - 11/30	7.2	7.2	7.4	7.3	7.3

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-1



RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2

CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

Average of 32 Bear Management Areas (BMA)

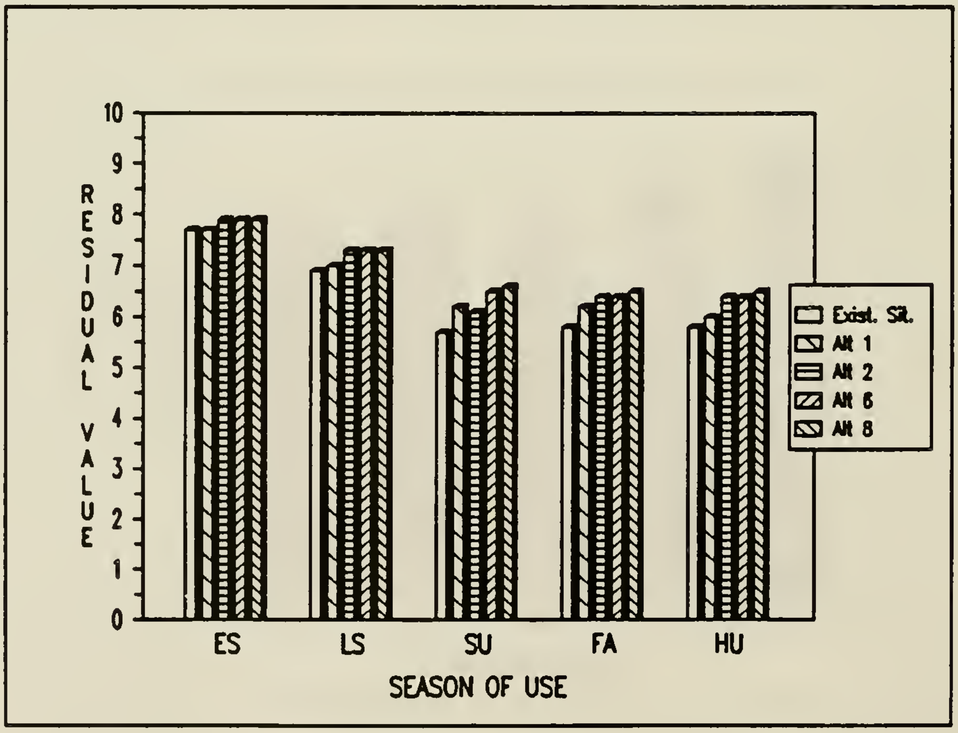
TABLE E-2

HUNGRY HORSE DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	7.7	7.8	7.9	7.9	7.9
Late Spring (LS) 5/15 - 6/30	6.9	7.0	7.3	7.3	7.3
Summer(SU) 7/1 - 8/31	5.7	6.2	6.1	6.5	6.6
Fall (FA) 9/1 - 10/14	5.8	6.2	6.4	6.4	6.5
Hunting (HU) 10/15 - 11/30	5.8	6.0	6.4	6.4	6.5

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-2



RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

Average of 18 Bear Management Areas (BMA)

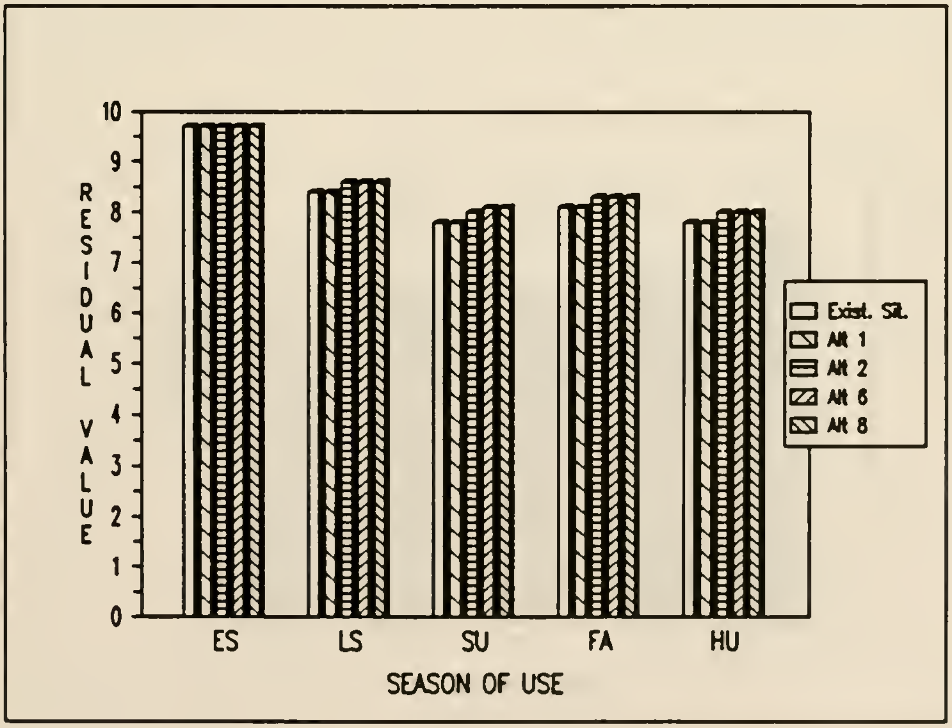
TABLE E-3

SPOTTED BEAR RANGER DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.7	9.7	9.7	9.7	9.7
Late Spring (LS) 5/15 - 6/30	8.4	8.4	8.6	8.6	8.6
Summer(SU) 7/1 - 8/31	7.8	7.8	8.0	8.1	8.1
Fall (FA) 9/1 - 10/14	8.1	8.1	8.3	8.3	8.3
Hunting (HU) 10/15 - 11/30	7.8	7.8	8.0	8.0	8.0

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-3



RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

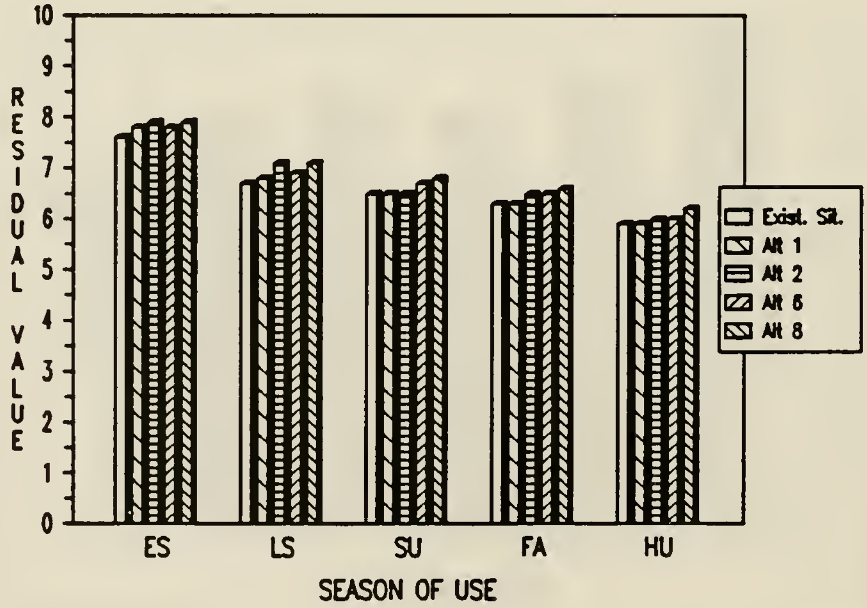
Average of 45 Bear Management Areas (BMA)

TABLE E-4 **SWAN LAKE DISTRICT, (SWAN UNIT)**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	7.6	7.8	7.9	7.8	7.9
Late Spring (LS) 5/15 - 6/30	6.7	6.8	7.1	6.9	7.1
Summer(SU) 7/1 - 8/31	6.5	6.5	6.5	6.7	6.8
Fall (FA) 9/1 - 10/14	6.3	6.3	6.5	6.5	6.6
Hunting (HU) 10/15 - 11/30	5.9	5.9	6.0	6.0	6.2

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-4



RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

TABLE E-5 **SWAN LAKE DISTRICT, (ISLAND UNIT)**

FIGURE E-5

THERE IS NO OCCUPIED GRIZZLY BEAR HABITAT IN THE SWAN LAKE DISTRICT, (ISLAND UNIT).

RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

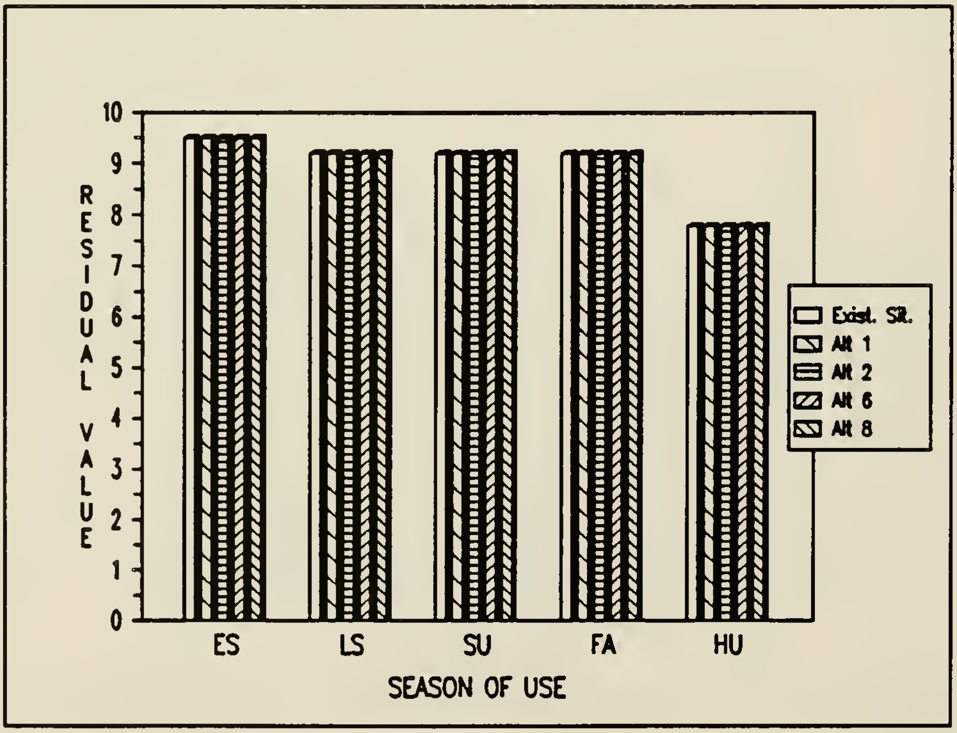
Average of 2 Bear Management Areas (BMA)

TABLE E-6 **TALLY LAKE DISTRICT**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.5	9.5	9.5	9.5	9.5
Late Spring (LS) 5/15 - 6/30	9.2	9.2	9.2	9.2	9.2
Summer(SU) 7/1 - 8/31	9.2	9.2	9.2	9.2	9.2
Fall (FA) 9/1 - 10/14	9.2	9.2	9.2	9.2	9.2
Hunting (HU) 10/15 - 11/30	7.8	7.8	7.8	7.8	7.8

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-6



RESIDUAL IMPACT VALUE FOR GRIZZLY BEAR MS-1 AND MS-2
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; HIGHWAYS; AND PRIVATE LAND

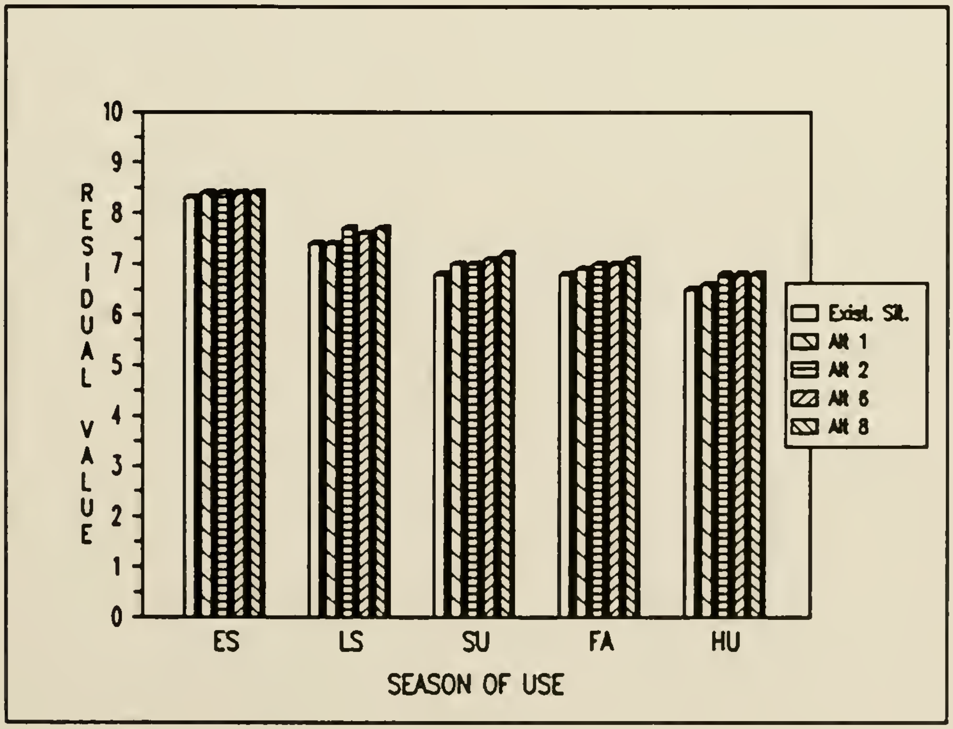
Average of 137 Bear Management Areas (BMA)

TABLE E-7 **TOTAL FOREST**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1 *	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.3	8.4	8.4	8.4	8.4
Late Spring (LS) 5/15 - 6/30	7.4	7.4	7.7	7.6	7.7
Summer(SU) 7/1 - 8/31	6.8	7.0	7.0	7.1	7.2
Fall (FA) 9/1 - 10/14	6.8	6.9	7.0	7.0	7.1
Hunting (HU) 10/15 - 11/30	6.5	6.6	6.8	6.8	6.8

* Interpolation between Existing Situation & Alternative 2 or 6

FIGURE E-7



APPENDIX F

TABLES AND FIGURES
RESIDUAL IMPACT VALUES FOR ELK HABITAT CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS
Average of 40 Bear Management Areas (BMA)

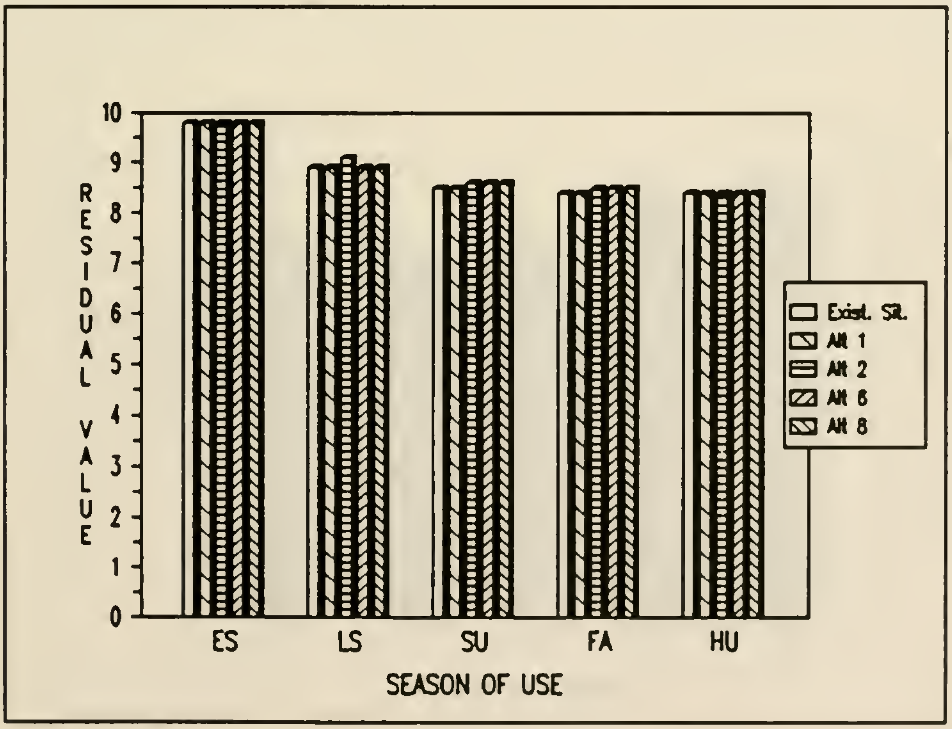
TABLE F-1

GLACIER VIEW DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.8	9.8	9.8	9.8	9.8
Late Spring (LS) 5/15 - 6/30	8.9	8.9	8.1	8.9	8.9
Summer(SU) 7/1 - 8/31	8.5	8.5	8.6	8.6	8.6
Fall (FA) 9/1 - 10/14	8.4	8.4	8.5	8.5	8.5
Hunting (HU) 10/15 - 11/30	8.4	8.4	8.4	8.4	8.4

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE F-1



RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 32 Bear Management Areas (BMA)

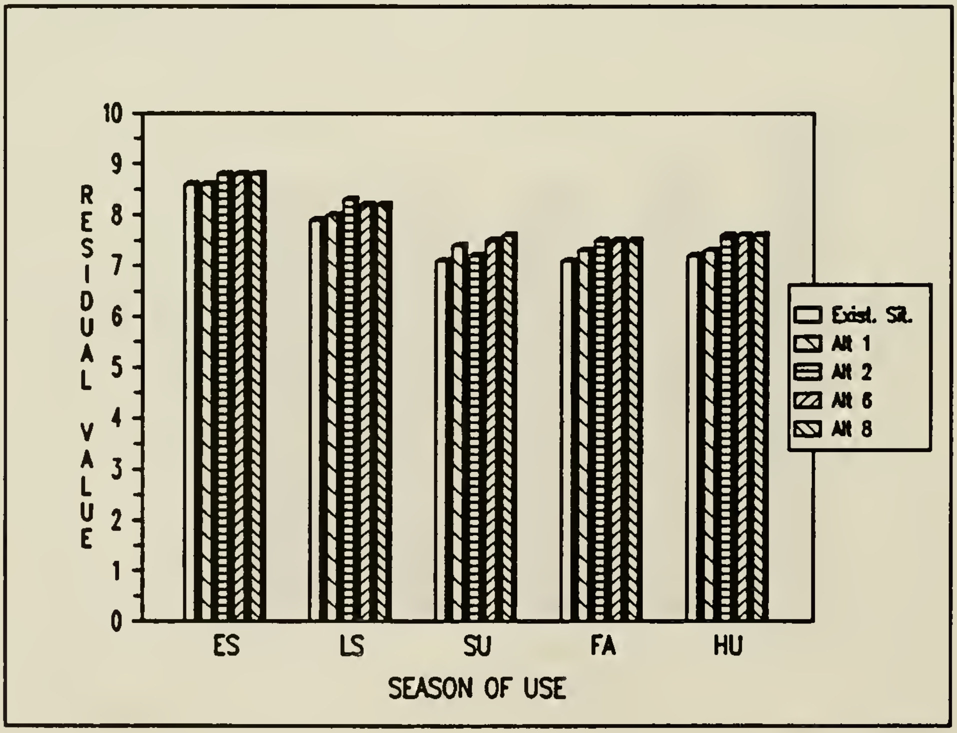
TABLE F-2

HUNGRY HORSE DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	8.6	8.6	8.8	8.8	8.8
Late Spring (LS) 5/15 - 6/30	7.9	8.0	8.3	8.2	8.2
Summer(SU) 7/1 - 8/31	7.1	7.4	7.2	7.5	7.6
Fall (FA) 9/1 - 10/14	7.1	7.3	7.5	7.5	7.5
Hunting (HU) 10/15 - 11/30	7.2	7.3	7.6	7.6	7.6

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE F-2



RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS
Average of 18 Bear Management Areas (BMA)

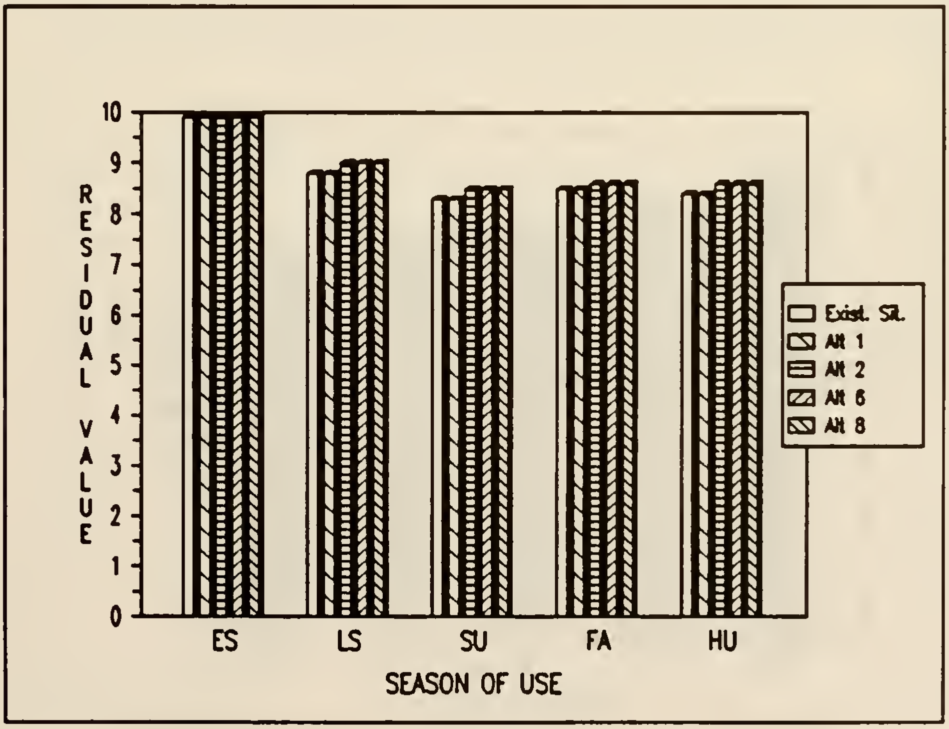
TABLE F-3

SPOTTED BEAR RANGER DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.9	9.9	9.9	9.9	9.9
Late Spring (LS) 5/15 - 6/30	8.8	8.8	9.0	9.0	9.0
Summer(SU) 7/1 - 8/31	8.5	8.3	8.5	8.5	8.5
Fall (FA) 9/1 - 10/14	8.5	8.5	8.6	8.6	8.6
Hunting (HU) 10/15 - 11/30	8.4	8.4	8.6	8.6	8.6

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE F-3



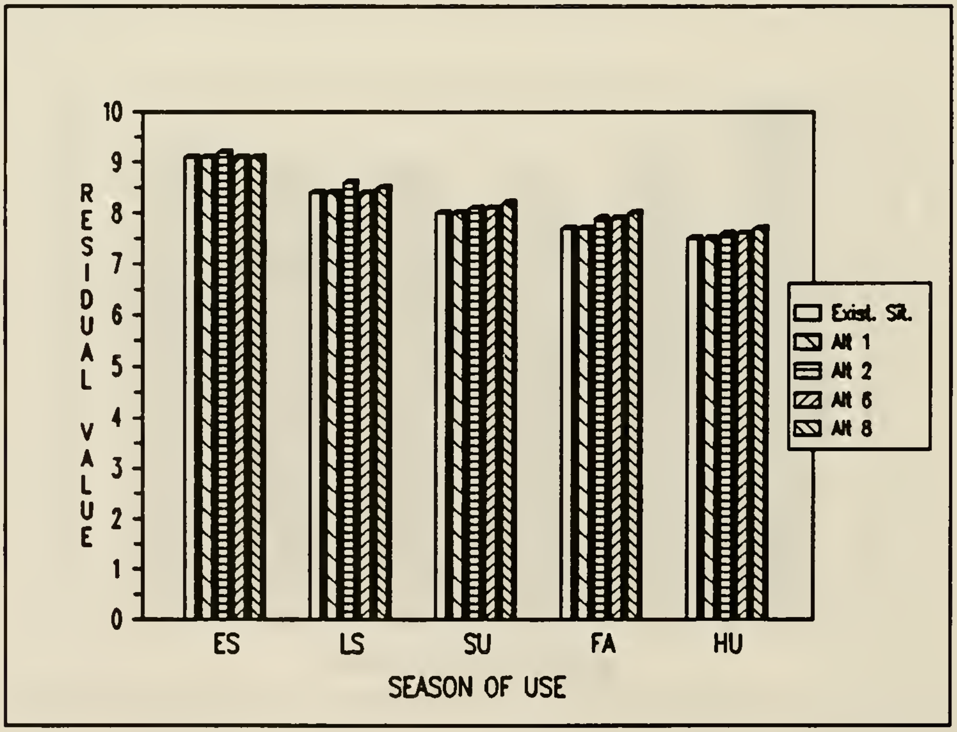
RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS
Average of 45 Bear Management Areas (BMA)

TABLE F-4 **SWAN LAKE DISTRICT, (SWAN UNIT)**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.1	9.1	9.2	9.1	9.1
Late Spring (LS) 5/15 - 6/30	8.4	8.4	8.6	8.4	8.5
Summer(SU) 7/1 - 8/31	8.0	8.0	8.1	8.1	8.2
Fall (FA) 9/1 - 10/14	7.7	7.7	7.9	7.9	8.0
Hunting (HU) 10/15 - 11/30	7.5	7.5	7.6	7.6	7.7

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE F-4



RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

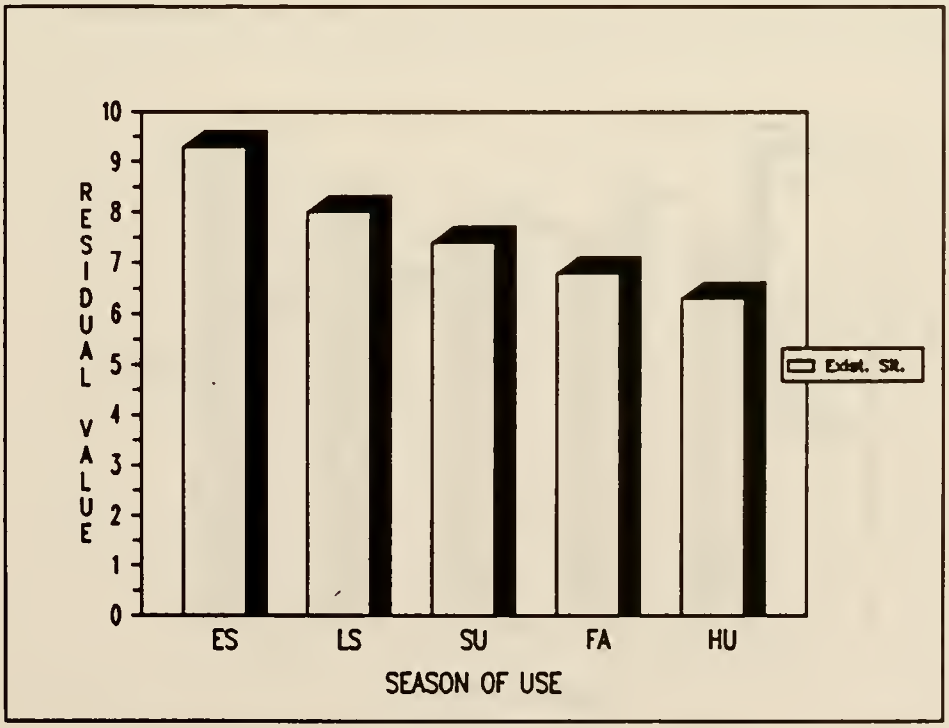
Average of 8 Road Density Areas (RDA)

TABLE F-5 **SWAN LAKE DISTRICT, (ISLAND UNIT)**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.3	#	#	#	#
Late Spring (LS) 5/15 - 6/30	8.0	#	#	#	#
Summer(SU) 7/1 - 8/31	7.4	#	#	#	#
Fall (FA) 9/1 - 10/14	6.8	#	#	#	#
Hunting (HU) 10/15 - 11/30	6.3	#	#	#	#

# Assumed to be same as Existing Situation

FIGURE F-5



RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

Average of 2 Bear Management Areas (BMA) & 25 Road Density Areas (RDA)

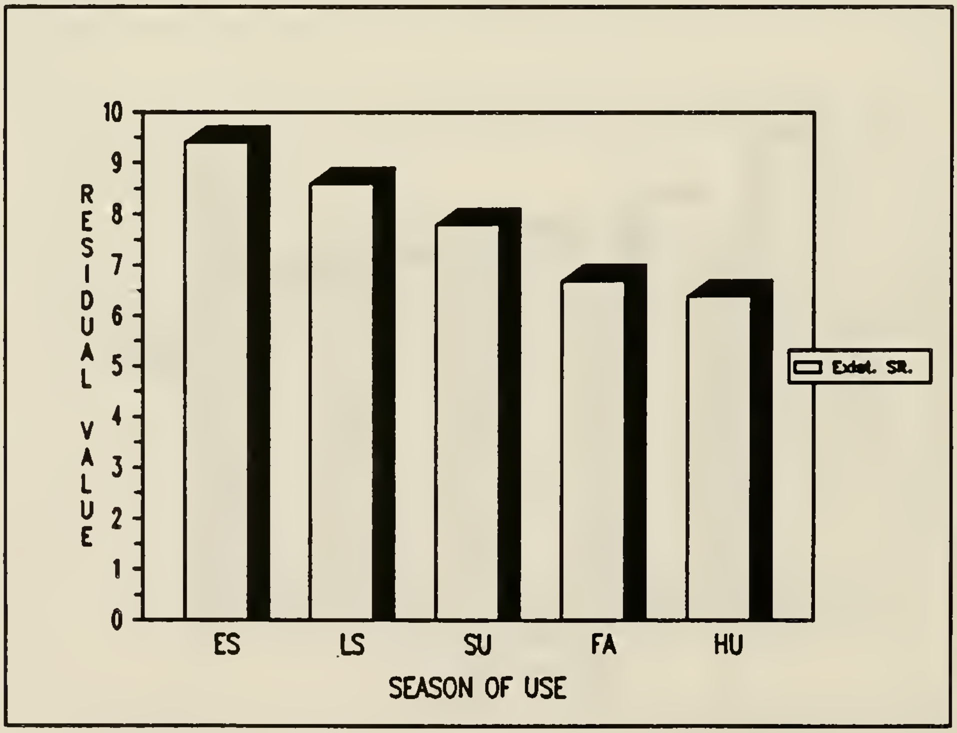
TABLE F-6

TALLY LAKE DISTRICT

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.4	#	#	#	#
Late Spring (LS) 5/15 - 6/30	8.6	#	#	#	#
Summer(SU) 7/1 - 8/31	7.8	#	#	#	#
Fall (FA) 9/1 - 10/14	6.7	#	#	#	#
Hunting (HU) 10/15 - 11/30	6.4	#	#	#	#

# Assumed to be same as Existing Situation

FIGURE F-6



RESIDUAL IMPACT VALUES FOR ELK HABITAT
CONSIDERING PRIVATE INDUSTRIAL, STATE, AND NATIONAL FOREST SYSTEM ROADS; ADMINISTRATIVE ROAD USE; AND HIGHWAYS

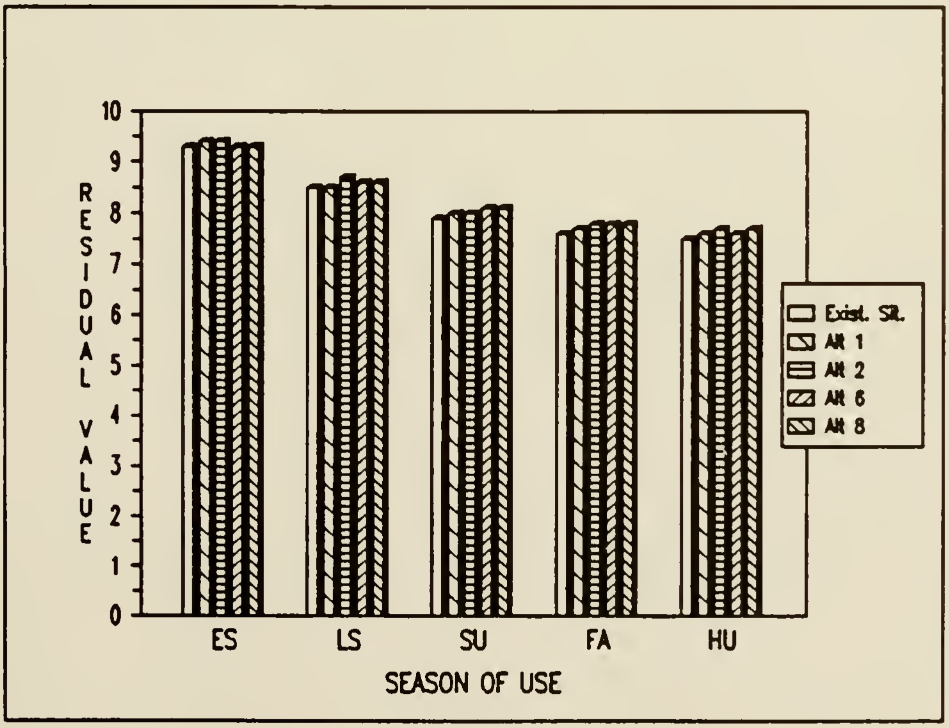
Average of 137 Bear Management Areas (BMA) & 33 Road Density Areas(RDA)

TABLE F-7 **TOTAL FOREST**

	ALTERNATIVE				
Season of Use	Existing Situation	Alt 1*	Alt 2	Alt 6	Alt 8
Early Spring (ES) 4/1 - 5/14	9.3	9.4	9.4	9.3	9.3
Late Spring (LS) 5/15 - 6/30	8.5	8.5	8.7	8.6	8.6
Summer(SU) 7/1 - 8/31	7.9	8.0	8.0	8.1	8.1
Fall (FA) 9/1 - 10/14	7.6	7.7	7.8	7.8	7.8
Hunting (HU) 10/15 - 11/30	7.5	7.6	7.6	7.6	7.7

* Interpolation between Existing Situation and Alternative 2 or 6

FIGURE F-7



APPENDIX G

SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

EXISTING SITUATION					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
GV	701	UNFF	A 1	13.4	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	9.8	9.5	9.5	0.2	9.8	9.5	9.5
	702	UNFF	A 2	16.0	0.2	10.0	9.8	8.0	0.2	10.0	9.8	8.0	0.2	10.0	9.8	8.0	0.2	9.9	9.8	8.0	0.2	9.9	9.8	8.0
	703	UNFF	A 3	25.9	0.2	10.0	9.8	9.8	0.2	10.0	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7
	704	UNFF	A 4	24.4	0.3	10.0	9.8	9.8	0.3	10.0	9.7	9.7	0.3	9.6	9.7	9.7	0.3	9.5	9.5	9.5	0.3	9.5	9.5	9.5
	705	UNFF	A 5	10.8	0.6	10.0	9.6	8.0	0.6	9.8	9.2	7.7	0.6	9.1	9.3	7.8	0.6	9.0	9.1	7.7	0.6	9.0	9.1	7.7
	706	UNFF	B 1	9.0	0.7	10.0	9.5	9.5	0.7	9.9	9.2	9.2	0.7	9.9	9.3	9.3	0.7	9.7	9.2	9.2	0.7	9.7	9.2	9.2
	707	UNFF	B 2	7.4	1.2	10.0	8.9	6.9	1.2	9.1	8.8	6.8	1.2	9.1	8.6	6.7	1.2	8.6	8.4	6.6	1.2	8.6	8.4	6.6
	708	UNFF	B 3	19.7	0.2	10.0	9.9	9.9	0.2	9.9	9.8	9.8	0.2	9.6	9.7	9.7	0.2	9.5	9.6	9.6	0.2	9.5	9.6	9.6
	709	UNFF	B 4	19.1	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9
	710	UNFF	B 5	14.0	0.4	10.0	9.6	9.6	0.4	8.9	9.3	9.3	0.4	8.4	7.9	7.9	0.4	8.3	7.5	7.5	0.4	8.3	7.6	7.6
	711	UNFF	B 6	13.3	1.1	9.4	8.9	8.2	1.1	7.9	7.2	6.7	1.1	7.5	5.9	5.4	1.1	7.2	5.5	5.1	1.1	7.2	5.5	5.1
	712	UNFF	B 7	11.7	0.1	9.8	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	713	UNFF	B 8	12.1	0.5	10.0	9.6	9.6	0.5	8.8	9.3	9.3	0.5	8.3	7.6	7.6	0.5	8.2	7.5	7.5	0.5	8.2	7.5	7.5
	714	UNFF	B 9	10.8	0.3	10.0	9.7	9.7	0.3	9.3	9.4	9.4	0.3	9.0	8.5	8.5	0.3	8.8	8.1	8.1	0.3	8.8	8.1	8.1
	715	UNFF	B 10	13.9	0.9	9.1	8.9	7.2	1.1	7.1	7.0	5.7	1.1	6.6	5.3	4.3	0.9	6.3	4.9	4.1	0.9	6.4	4.9	4.1
	716	UNFF	C 1	16.4	0.1	10.0	9.8	9.8	0.1	9.6	9.7	9.7	0.1	9.4	9.2	9.2	0.1	9.2	8.8	8.8	0.1	9.2	8.8	8.8
	717	UNFF	C 2	9.1	0.4	10.0	9.7	9.7	0.4	9.0	9.4	9.4	0.4	8.5	7.9	7.9	0.4	8.5	7.8	7.8	0.4	8.5	7.8	7.8
	718	UNFF	C 3	7.8	0.8	10.0	9.4	9.4	0.8	9.2	8.8	8.8	0.8	8.9	7.8	7.8	0.8	8.6	7.5	7.5	0.8	8.6	7.5	7.5
	719	UNFF	C 4	6.9	1.2	10.0	9.1	5.4	1.3	8.2	8.3	4.9	1.3	7.5	5.8	3.7	1.2	7.2	5.7	3.6	1.2	6.9	5.8	3.6
	720	UNFF	C 5	13.2	0.5	10.0	9.2	9.1	0.5	8.6	8.8	8.7	0.5	8.1	7.0	6.9	0.5	7.8	6.8	6.7	0.5	7.8	6.8	6.7
	721	UNFF	C 6	10.2	0.3	10.0	9.2	6.9	0.3	9.5	9.0	6.7	0.3	9.3	8.4	6.3	0.3	9.0	8.4	6.3	0.3	9.0	8.4	6.3
	722	UNFF	C 7	12.4	0.1	10.0	9.9	9.9	0.1	9.8	9.8	9.8	0.7	8.9	9.1	9.1	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	723	UNFF	C 8	9.0	0.5	10.0	9.5	9.5	0.5	8.5	9.0	9.0	1.5	6.4	7.4	7.4	0.5	8.2	8.3	8.3	0.5	8.2	8.3	8.3
	724	UNFF	C 9	16.6	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	725	UNFF	C 10	9.8	0.6	10.0	9.3	9.3	0.6	8.6	8.8	8.8	0.6	8.0	6.9	6.9	0.6	7.9	6.9	6.9	0.6	7.9	6.9	6.9
	726	UNFF	C 11	10.0	0.8	10.0	9.4	9.4	0.8	9.8	8.7	8.7	0.8	9.8	8.7	8.7	0.8	9.6	8.7	8.7	0.8	9.6	8.7	8.7
	727	UNFF	C 12	9.2	0.5	10.0	9.6	9.6	0.5	8.7	9.3	9.2	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4
	728	LNFF	A 1	12.7	0.7	8.1	7.2	6.9	0.7	7.6	7.0	6.7	0.7	7.4	6.4	6.1	0.7	7.3	6.2	6.0	0.7	7.3	6.2	6.0
	729	LNFF	A 2	16.8	0.3	10.0	9.7	9.7	0.3	9.9	9.5	9.5	0.4	8.9	9.4	9.4	0.4	8.9	9.2	9.2	0.3	8.7	8.1	8.1
	730	LNFF	A 3	11.4	0.9	10.0	9.2	9.2	0.9	9.8	8.6	8.6	1.3	8.0	8.0	8.0	1.3	7.6	7.3	7.3	0.9	7.5	6.5	6.5
	731	LNFF	A 4	14.5	0.8	10.0	9.3	8.4	0.8	8.0	6.9	6.2	1.2	8.0	6.6	5.9	1.2	7.7	6.3	5.7	0.8	7.8	6.5	5.9
	732	LNFF	A 5	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	733	LNFF	A 6	12.6	0.3	10.0	9.7	9.7	0.3	8.9	8.4	8.4	1.4	8.2	7.4	7.4	1.2	7.8	7.3	7.3	0.3	8.7	7.9	7.9
	734	LNFF	A 7	10.9	1.6	9.8	8.4	8.4	1.6	5.6	3.5	3.5	1.6	5.6	3.7	3.7	1.6	5.3	3.3	3.3	1.6	5.3	3.3	3.3
	735	LNFF	A 8	11.3	0.7	10.0	9.4	7.8	0.7	7.2	6.0	5.1	0.7	7.2	6.1	5.1	0.7	7.0	5.7	4.8	0.7	7.0	5.7	4.8
	736	LNFF	A 9	9.6	0.7	9.5	8.7	8.6	0.7	8.6	7.6	7.5	0.9	7.6	7.5	7.3	0.9	7.4	7.1	7.0	0.7	7.2	6.4	6.3
	737	LNFF	A 10	18.9	1.1	8.5	7.3	7.2	1.1	6.6	4.9	4.8	2.2	6.0	4.0	4.0	1.9	5.3	3.8	3.7	1.1	5.5	3.5	3.4
	738	LNFF	A 11	9.9	1.2	9.8	8.8	6.5	1.2	7.8	6.8	5.1	1.9	7.3	6.3	4.7	1.6	6.9	6.4	4.8	1.2	6.8	5.7	4.3
	739	LNFF	A 12	13.9	1.5	9.4	8.1	6.9	1.5	7.6	6.7	5.7	1.9	7.6	6.4	5.5	1.5	7.2	6.5	5.6	1.5	7.2	6.5	5.6
	740	LNFF	A 13	8.5	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.4	5.0	0.4	8.7	8.4	5.0

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER. FLATHEAD NATIONAL FOREST

EXISTING SITUATION					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
HH	601	HGHS	A 1	27.0	0.0	10.0	10.0	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1
	602	HGHS	A 2	18.7	1.1	7.6	7.7	7.7	1.1	6.2	4.8	4.8	1.1	6.2	4.8	4.8	1.1	6.1	4.7	4.7	1.1	6.1	4.7	4.7
	603	HGHS	A 3	9.6	0.6	9.7	9.2	9.2	0.6	7.7	6.9	6.9	0.6	7.7	6.9	6.9	0.6	7.7	6.7	6.7	0.6	7.7	6.7	6.7
	604	HGHS	A 4	15.9	0.7	8.6	8.3	8.3	0.7	7.6	7.3	7.3	0.7	7.4	6.3	6.3	0.7	7.6	7.2	7.2	0.7	7.4	6.4	6.4
	605	HGHS	A 5	9.5	2.1	7.9	5.8	5.8	2.1	5.6	4.5	4.5	2.1	5.2	2.5	2.5	2.1	5.1	2.6	2.6	2.1	5.1	2.5	2.5
	606	HGHS	A 6	9.8	1.7	8.5	7.5	7.5	1.7	6.9	5.9	5.9	1.7	5.8	4.3	4.3	1.7	5.8	4.6	4.6	1.7	5.7	4.2	4.2
	607	HGHS	A 7	12.1	2.4	7.7	5.4	5.4	2.4	6.5	4.4	4.4	2.4	4.9	2.9	2.9	2.4	4.7	2.1	2.1	2.4	4.5	1.6	1.6
	608	SLVN	B 1	20.2	0.8	8.6	7.8	7.8	0.8	7.5	6.8	6.8	1.3	5.8	4.5	4.5	1.3	5.8	4.8	4.8	1.1	5.9	5.0	5.0
	609	SLVN	B 2	16.4	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.2	9.3	9.1	9.1	0.2	9.2	8.9	8.9	0.2	9.2	8.9	8.9
	610	SLVN	B 3	20.0	0.5	8.7	7.9	7.9	0.5	8.2	7.6	7.6	1.5	5.7	4.0	4.0	1.5	5.6	3.9	3.9	1.5	5.6	3.7	3.7
	611	HGHS	B 1	6.4	0.6	8.1	7.3	3.2	0.6	8.0	7.3	3.2	0.8	7.1	6.0	2.8	0.8	7.1	5.9	2.7	0.6	7.8	7.1	3.1
	612	HGHS	B 2	11.1	0.1	10.0	9.9	8.9	0.1	10.0	9.9	8.9	0.2	9.6	9.4	8.4	0.2	9.6	9.4	8.4	0.1	9.9	9.9	8.9
	613	HGHS	B 3	8.5	0.8	9.8	8.7	8.6	0.8	8.0	8.5	8.4	0.8	7.7	8.6	8.5	0.8	7.5	8.1	8.0	0.8	6.6	5.1	5.1
	614	HGHS	B 4	11.7	1.0	7.2	5.9	5.8	1.0	6.6	5.6	5.5	1.2	5.8	4.3	4.2	1.0	5.9	4.6	4.5	1.0	5.8	4.4	4.4
	615	HGHS	B 5	14.6	1.3	9.4	8.4	8.4	1.3	7.3	7.1	7.1	1.5	5.7	4.5	4.5	1.5	5.7	5.0	5.0	1.3	5.6	3.7	3.7
	616	HGHS	B 6	7.8	1.3	6.9	6.2	6.2	1.3	5.8	4.5	4.5	2.1	4.9	2.2	2.2	2.1	4.9	2.7	2.7	1.3	5.4	3.5	3.5
	617	HGHS	B 7	8.1	1.4	6.2	6.6	6.6	1.4	5.8	3.8	3.8	1.5	5.5	3.2	3.2	1.5	5.5	3.3	3.3	1.4	5.5	3.3	3.3
	618	HGHS	C 1	8.3	0.3	9.3	9.5	9.5	0.6	7.6	6.6	6.6	0.6	7.6	6.7	6.7	0.6	7.5	6.4	6.4	0.3	8.8	8.2	8.2
	619	HGHS	C 2	10.5	0.5	8.4	8.8	8.8	1.2	5.9	5.0	5.0	1.5	5.6	3.8	3.8	1.5	5.5	3.8	3.8	0.9	6.4	5.0	5.0
	620	HGHS	C 3	9.5	1.0	7.1	5.7	5.7	1.0	6.5	5.5	5.5	1.0	6.2	4.9	4.9	1.0	6.4	5.4	5.4	1.0	6.3	5.0	5.0
	621	HGHS	C 4	8.1	0.6	8.0	7.1	7.1	0.6	7.9	7.0	7.0	0.7	7.5	6.8	6.8	0.7	7.2	6.2	6.2	0.6	7.6	6.4	6.4
	622	HGHS	C 5	12.9	0.6	8.5	7.7	7.7	0.6	8.4	7.4	7.4	2.9	4.6	1.7	1.7	2.9	4.6	2.1	2.1	0.6	7.4	6.1	6.1
	623	SLVN	D 1	16.4	0.4	8.9	8.3	8.3	0.4	8.7	8.1	8.1	1.3	5.8	4.2	4.2	1.3	5.7	4.2	4.2	0.8	6.6	5.2	5.2
	624	LMFF	A 1	5.8	0.2	9.8	9.8	7.7	0.2	9.6	9.4	7.4	0.2	9.6	9.4	7.4	0.2	9.5	9.4	7.4	0.2	9.6	9.5	7.5
	625	LMFF	A 2	6.6	0.9	6.9	5.7	5.0	0.9	6.8	5.5	4.9	0.9	6.8	5.5	4.9	0.9	6.8	5.4	4.8	0.9	6.8	5.5	4.9
	626	LMFF	A 3	20.8	0.6	9.3	8.7	8.0	0.7	8.2	8.2	7.5	0.8	6.7	5.4	5.0	0.8	7.5	6.9	6.4	0.8	6.7	5.4	5.0
	627	LMFF	A 4	2.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	628	UMFF	A 1	9.2	1.0	6.5	5.1	4.5	1.0	6.3	4.8	4.3	1.0	6.3	4.8	4.3	1.0	6.3	5.0	4.4	1.0	6.3	5.0	4.4
	629	UMFF	A 2	9.8	0.2	9.3	8.9	8.9	0.2	9.2	8.9	8.9	0.8	7.6	8.1	8.1	0.8	7.6	7.9	7.9	0.8	7.3	7.0	7.0
	630	UMFF	A 3	17.5	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.7	7.9	7.6	7.6	0.7	7.8	7.5	7.5	0.7	7.8	7.5	7.5
	631	UMFF	A 4	16.2	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	9.9	9.9	9.9	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	632	UMFF	A 5	8.3	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SB	401	SLVN	C 1	22.0	0.4	10.0	9.7	9.7	0.4	8.5	8.1	8.1	0.4	8.5	8.0	8.0	0.4	8.4	7.8	7.8	0.4	8.4	7.8	7.8
	402	SLVN	C 2	21.2	0.4	10.0	9.7	9.7	0.4	8.7	8.1	8.1	0.4	8.3	7.7	7.7	0.4	8.2	7.5	7.5	0.4	8.2	7.5	7.5
	403	SLVN	C 3	19.5	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.9	9.7	9.7	0.0	9.9	9.7	9.7
	404	SLVN	C 4	10.2	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	405	SLVN	C 5	15.2	1.4	8.8	8.6	8.6	1.4	6.8	6.4	6.4	1.6	5.8	3.9	3.9	1.4	6.5	5.9	5.9	1.4	5.7	4.4	4.4
	406	SLVN	C 6	13.9	0.5	9.3	9.4	9.4	0.5	8.7	8.0	8.0	0.9	7.0	6.1	6.1	0.5	8.2	7.7	7.7	0.5	7.9	7.1	7.1

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

EXISTING SITUATION					*EARLY SPRING SEASON*				*LATE SPRING SEASON*				*SUMMER SEASON*				*FALL SEASON*				*HUNTING SEASON*			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GHZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SB	407	SLVN	D 2	10.8	0.0	10.0	9.9	9.9	1.1	8.1	6.6	6.6	1.2	5.9	4.3	4.3	1.2	6.1	5.9	5.9	1.2	5.7	4.2	4.2
	408	SLVN	D 3	10.0	0.0	10.0	10.0	10.0	0.7	7.3	6.3	6.3	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2
	409	BNKR	B 1	18.8	0.6	10.0	9.5	9.5	0.6	9.0	8.2	8.2	0.6	8.3	8.2	8.2	0.6	8.3	8.2	8.2	0.6	8.0	7.4	7.4
	410	BNKR	B 2	19.6	1.0	9.9	8.9	8.9	1.0	6.8	5.3	5.3	1.0	6.3	5.4	5.4	1.0	6.2	5.2	5.2	1.0	6.1	4.7	4.7
	411	BNKR	B 3	11.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	412	BNKR	B 4	16.5	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	413	BNKR	B 5	21.7	0.2	10.0	9.8	9.8	0.2	9.3	8.9	8.9	0.2	9.1	8.7	8.7	0.2	9.0	8.6	8.6	0.2	9.0	8.6	8.6
	414	BNKR	B 6	16.1	0.0	9.9	9.9	9.9	0.1	9.8	9.6	9.6	0.1	9.8	9.7	9.7	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	415	BNKR	B 7	16.4	0.2	9.6	9.3	9.3	0.8	7.2	6.5	6.5	0.8	6.8	5.6	5.6	0.8	6.7	5.3	5.3	0.8	6.7	5.3	5.3
	416	BNKR	B 8	16.0	0.0	10.0	10.0	10.0	0.2	9.2	8.8	8.8	0.6	7.5	6.6	6.6	0.2	9.1	8.7	8.7	0.2	9.1	8.7	8.7
	417	BNKR	B 9	25.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.1	9.7	9.6	9.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	418	BNKR	B 10	3.5	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SL	102	HGHS	A 9	17.9	0.6	8.3	9.0	7.9	0.6	7.7	7.1	6.2	0.8	6.9	6.1	5.4	0.8	6.9	6.0	5.3	0.8	6.7	5.4	4.8
	104	SLVN	A 2	17.2	0.4	8.9	9.4	7.9	0.4	8.4	7.8	6.5	0.4	8.4	7.8	6.6	0.4	8.4	7.7	6.5	0.4	8.4	7.7	6.5
	107	SLVN	A 5	9.0	0.0	10.0	9.9	7.0	0.0	10.0	9.9	7.0	0.1	9.6	9.7	6.9	0.1	9.5	9.6	6.8	0.1	9.5	9.6	6.8
	109	SLVN	A 7	11.1	0.2	10.0	9.5	6.1	0.2	9.9	9.4	6.1	0.2	9.9	9.5	6.1	0.2	9.8	9.5	6.1	0.2	9.8	9.5	6.1
	110	BNKR	A 7	12.9	1.2	6.9	5.3	5.3	1.2	6.7	4.8	4.8	1.2	6.7	4.8	4.8	1.2	6.5	4.8	4.8	1.2	6.5	4.8	4.8
	111	SLVN	A 9	12.6	0.6	10.0	9.5	8.8	0.6	9.9	9.1	8.4	0.6	8.9	9.2	8.5	0.6	8.8	9.1	8.4	0.6	8.3	7.6	7.0
	112	SLVN	A 10	10.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	113	SLVN	A 11	15.3	0.6	10.0	9.5	9.5	0.6	9.9	9.0	9.0	0.6	8.0	8.0	8.0	0.6	7.9	7.9	7.9	0.3	8.9	8.4	8.4
	114	SLVN	A 12	6.1	1.6	8.2	8.3	5.1	1.6	7.6	6.4	4.1	1.6	7.3	6.4	4.1	1.6	7.0	6.3	4.0	1.1	6.8	6.8	4.3
	115	NMSR	A 1	10.6	1.4	9.4	8.8	7.2	1.4	7.4	5.5	4.6	1.4	6.2	5.4	4.5	1.4	6.1	5.4	4.5	1.4	5.9	5.4	4.5
	116	NMSR	A 2	20.9	1.5	10.0	8.8	8.8	1.5	8.3	6.7	6.7	1.5	7.9	6.4	6.4	1.5	7.4	6.1	6.1	1.5	6.4	6.1	6.1
	117	NMSR	A 3	10.4	3.7	8.4	6.7	6.5	3.7	5.3	2.8	2.8	3.7	5.0	1.7	1.7	3.7	4.9	1.7	1.7	3.7	4.0	1.7	1.7
	118	NMSR	A 4	10.4	4.1	10.0	6.9	6.5	4.1	7.2	4.3	4.1	4.1	5.5	2.7	2.6	4.1	5.3	2.7	2.6	4.1	3.9	1.8	1.7
	119	NMSR	A 5	10.9	2.0	7.6	7.9	7.9	2.0	6.4	4.2	4.2	2.0	6.1	4.1	4.1	2.0	5.8	4.0	4.0	2.0	5.3	3.8	3.8
	120	NMSR	A 6	11.3	2.7	9.7	7.9	7.6	2.7	9.3	7.0	6.7	2.7	7.9	5.4	5.2	2.7	7.4	6.7	6.4	2.7	6.4	4.2	4.1
	121	NMSR	A 7	16.4	1.8	9.6	7.3	7.3	1.8	9.6	7.2	7.2	1.8	9.6	7.2	7.2	1.8	9.2	7.1	7.1	1.8	9.2	7.1	7.1
	122	NMSR	A 8	17.9	1.7	9.8	8.7	8.2	1.7	9.8	8.6	8.1	1.7	9.8	8.6	8.1	1.7	9.1	8.6	8.1	1.7	9.0	8.3	7.9
	123	BNKR	A 1	15.4	0.4	9.1	9.3	9.3	0.4	8.7	8.0	8.0	0.4	8.7	8.0	8.0	0.4	8.6	8.0	8.0	0.4	8.6	8.0	8.0
	124	BNKR	A 2	14.0	0.5	10.0	9.5	9.5	0.5	9.1	8.4	8.4	0.5	8.9	8.2	8.2	0.5	8.8	8.2	8.2	0.5	8.8	8.2	8.2
	125	BNKR	A 3	15.4	1.4	7.4	5.7	5.5	1.4	6.9	4.7	4.5	1.4	6.1	4.6	4.4	1.4	5.9	4.5	4.4	1.4	5.3	3.6	3.5
	126	BNKR	A 4	35.9	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	127	BNKR	A 5	11.3	0.8	10.0	9.3	9.3	0.8	9.9	9.1	9.1	0.8	8.5	8.7	8.7	0.8	7.7	8.6	8.6	0.8	8.3	8.8	8.8
	128	BNKR	A 6	9.4	0.0	9.9	9.8	9.8	0.0	9.8	9.6	9.6	0.0	9.8	9.6	9.6	0.0	9.7	9.6	9.6	0.0	9.7	9.6	9.6
	129	BNKR	A 8	8.9	1.1	7.0	7.0	6.6	1.1	6.1	4.2	4.0	1.1	6.1	4.2	4.1	1.1	5.9	4.2	4.0	1.1	5.9	4.2	4.0
	130	BNKR	A 9	10.3	1.3	8.5	7.5	7.1	1.3	7.4	7.1	6.7	1.3	7.4	7.1	6.7	1.3	7.2	6.9	6.5	1.2	5.8	4.2	4.0
	131	SMSR	A 1	9.5	0.5	9.9	9.6	9.6	0.5	8.6	8.0	8.0	0.7	7.5	6.5	6.5	0.7	7.4	6.4	6.4	0.7	7.4	6.3	6.3
	132	SMSR	A 2	8.1	0.6	8.2	8.9	8.9	0.6	8.2	8.8	8.8	0.9	7.2	7.6	7.6	0.9	6.6	5.8	5.8	0.9	6.4	4.9	4.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

EXISTING SITUATION					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SL	133	SMSR	A 3	8.8	1.1	7.8	7.1	6.2	1.1	7.7	7.1	6.1	1.1	7.7	7.0	6.1	1.1	7.5	7.0	6.1	1.1	7.2	5.7	5.0
	134	SMSR	A 4	8.6	1.0	9.2	8.4	8.4	1.0	8.5	8.1	8.1	1.0	8.1	7.2	7.2	1.0	7.4	5.9	5.9	0.8	7.0	5.9	5.9
	135	SMSR	A 5	9.5	1.2	10.0	8.1	8.1	1.2	7.4	6.6	6.6	1.2	6.6	4.6	4.6	1.2	5.7	4.5	4.5	1.0	5.9	4.6	4.6
	136	SMSR	A 6	11.4	1.7	8.1	6.3	5.4	1.7	6.4	4.5	3.9	1.7	6.4	4.4	3.8	1.7	5.9	4.3	3.7	1.5	6.1	4.4	3.8
	137	SMSR	B 1	11.2	0.9	10.0	8.9	8.9	0.9	9.2	8.7	8.7	0.9	8.6	8.7	8.7	0.9	8.4	8.7	8.7	0.5	8.7	7.9	7.9
	138	SMSR	B 2	11.0	1.1	9.9	8.3	6.1	1.1	8.8	8.4	6.2	1.1	8.8	8.5	6.2	1.1	8.5	8.4	6.2	0.6	9.3	9.0	6.6
	139	SMSR	B 3	11.1	1.0	10.0	9.1	7.0	1.0	8.5	7.3	5.7	1.0	8.5	7.3	5.7	1.0	8.2	7.2	5.6	0.7	8.2	7.5	5.8
	140	SMSR	B 4	18.7	0.7	10.0	9.2	9.1	0.7	8.7	7.6	7.6	0.7	8.6	7.4	7.4	0.7	8.3	7.2	7.1	0.7	7.0	5.9	5.9
	141	SMSR	B 5	12.7	0.6	10.0	9.4	9.1	0.6	8.7	7.7	7.5	0.6	7.9	7.8	7.6	0.6	7.8	7.6	7.3	0.6	7.4	6.3	6.1
	142	SMSR	B 6	8.5	0.7	10.0	9.4	6.7	0.7	8.2	7.2	5.2	0.7	8.2	7.2	5.2	0.7	8.0	6.9	5.1	0.7	7.6	6.5	4.8
	143	BGSM	A 1	33.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	144	BGSM	A 2	7.7	1.3	7.6	6.5	6.5	1.3	7.5	6.5	6.5	1.3	7.5	6.5	6.5	1.3	7.2	6.4	6.4	0.8	7.3	5.9	5.9
	145	BGSM	A 3	6.1	1.3	8.3	7.8	5.9	1.3	8.2	7.7	5.9	1.3	8.2	7.8	5.9	1.3	7.8	7.6	5.7	0.9	6.5	4.8	3.8
	146	BGSM	A 4	8.7	1.0	7.9	7.0	6.9	1.0	7.9	6.9	6.9	1.0	7.9	7.0	7.0	1.0	7.5	6.7	6.7	0.9	6.8	5.9	5.9
	147	BGSM	A 5	8.4	1.0	8.7	8.1	6.0	1.0	8.6	8.0	6.0	1.0	8.6	8.1	6.0	1.0	8.2	7.9	5.9	0.7	7.9	6.7	5.1
	148	BGSM	A 6	5.2	0.4	9.0	8.5	5.2	0.4	8.9	8.4	5.2	0.4	8.9	8.5	5.3	0.4	8.7	8.5	5.3	0.3	8.5	7.7	4.8
	149	BGSM	A 7	11.8	1.2	7.2	8.0	6.5	1.2	7.2	7.9	6.4	1.2	7.2	8.0	6.5	1.2	7.0	7.7	6.2	1.1	5.8	4.7	3.9
	150	BGSM	A 8	16.8	0.8	8.7	8.6	7.5	0.8	8.7	8.5	7.4	0.8	8.7	8.6	7.4	0.8	8.4	8.3	7.2	0.5	8.1	7.1	6.2
TL	828	STRV	A 1	11.1	0.2	10.0	9.8	9.8	0.2	9.9	9.6	9.6	0.2	9.4	9.6	9.6	0.2	9.3	9.6	9.6	0.2	9.1	8.7	8.7
	829	STRV	A 2	15.2	0.5	10.0	9.6	9.1	0.5	9.9	9.3	8.8	0.5	9.8	9.2	8.7	0.5	8.6	9.2	8.7	0.5	8.0	7.3	6.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS AND HIGHWAYS ON ELK HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

EXISTING SITUATION				*EARLY SPRING SEASON *		* LATE SPRING SEASON *		* SUMMER SEASON *		* FALL SEASON *		* HUNTING SEASON *	
RD	NO	RDA/BMA	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)
SI	01	HASKILL 1	15.3	1.8	9.8	1.8	8.3	1.8	7.2	1.8	6.8	1.1	6.4
	02	HASKILL 2	19.0	0.5	9.7	0.5	9.6	0.5	9.5	0.5	9.4	0.5	9.4
	03	BK-STNR 1	12.7	2.6	9.6	2.6	7.4	2.6	6.5	2.6	6.1	2.5	5.2
	04	BK-STNR 2	13.3	2.9	7.9	2.9	6.9	2.9	6.9	2.9	5.8	2.1	5.5
	05	BK-STNR 3	11.6	3.6	9.3	3.6	9.2	3.6	9.2	3.6	8.5	3.6	8.5
	06	MNT EMS 1	15.6	2.9	8.5	2.9	6.2	2.9	5.6	2.9	5.2	2.7	4.7
	07	MNT EMS 2	14.9	2.7	9.8	2.7	9.3	2.7	7.8	2.7	7.2	2.7	5.4
	08	HOGTAIL	12.5	3.2	9.7	3.2	7.0	3.2	6.1	3.2	5.7	3.1	5.5
TL	802	TALLY 2	5.5	0.3	10.0	0.3	9.9	0.3	9.1	0.3	9.1	0.3	8.8
	803	TALLY 3	14.8	1.0	9.9	1.0	9.7	1.5	7.9	1.0	6.8	1.0	6.2
	804	TALLY 4	12.2	2.0	9.9	2.0	9.6	3.1	7.1	2.0	5.6	2.0	4.9
	805	TALLY 5	12.8	1.9	9.6	1.9	9.3	2.2	8.5	2.2	5.5	2.2	5.2
	806	TALLY 6	21.0	1.7	8.0	1.7	7.5	2.4	6.4	1.7	5.6	1.7	5.4
	807	TALLY 7	9.9	1.6	9.9	1.6	8.7	2.7	6.2	1.6	5.5	1.6	5.2
	808	TALLY 8	14.5	0.7	8.3	0.7	8.0	1.1	7.6	0.7	7.5	0.7	7.3
	809	TALLY 9	13.7	1.6	9.8	1.6	9.0	1.8	8.9	1.6	5.8	1.6	5.6
	810	TALLY 10	10.1	0.6	9.7	1.2	8.7	1.6	8.1	1.2	6.7	1.2	6.2
	811	TALLY 11	10.2	1.2	9.9	1.2	8.0	1.5	8.0	1.2	6.0	1.2	5.8
	812	TALLY 12	11.8	1.3	9.7	1.3	9.6	1.9	9.5	1.3	7.9	1.3	7.8
	813	TALLY 13	8.0	1.5	8.5	1.5	7.5	1.7	7.5	1.5	5.9	1.5	5.6
	814	TALLY 14	19.4	2.0	9.7	2.0	6.4	3.4	5.7	2.0	5.0	2.0	4.9
	815	TALLY 15	18.1	0.8	9.6	0.8	8.5	2.3	8.0	0.8	6.9	0.8	6.8
	816	TALLY 16	14.6	1.5	8.5	1.5	6.5	2.7	6.0	1.5	5.6	1.5	5.5
	817	TALLY 17	14.7	2.1	9.8	2.1	9.1	3.4	6.8	2.1	5.2	2.1	5.1
	818	TALLY 18	10.2	0.7	8.1	0.7	7.7	0.7	7.5	0.7	7.4	0.7	7.4
	819	TALLY 19	15.1	1.1	9.2	1.1	8.5	1.4	7.6	1.1	6.5	1.1	6.0
	820	TALLY 20	10.2	2.3	10.0	2.3	9.0	2.3	7.5	2.3	5.1	2.3	4.7
	822	TALLY 22	22.5	1.1	8.9	1.1	7.6	2.3	7.4	1.1	6.0	1.1	5.6
	823	TALLY 23	23.9	0.8	9.8	0.9	9.0	1.8	8.3	0.9	6.9	0.9	6.4
	824	TALLY 24	15.7	0.5	9.0	0.5	8.6	1.2	8.2	0.5	7.8	0.5	7.7
	825	TALLY 25	19.1	1.0	8.6	1.0	8.2	2.5	7.3	1.0	6.9	1.0	6.3
	826	TALLY 26	12.4	0.8	9.2	1.4	8.7	1.4	6.3	1.4	6.8	1.4	5.7
	827	TALLY 27	46.2	0.3	10.0	0.3	9.5	0.4	9.4	0.3	9.1	0.3	9.0
	828	STRV A 1	11.1	0.2	10.0	0.2	9.9	0.2	9.4	0.2	9.3	0.2	9.1
	829	STRV A 2	15.2	0.5	10.0	0.5	9.9	0.5	9.8	0.5	8.6	0.5	8.0

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 2

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
GV	701	UNFF	A 1	13.4	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	9.8	9.5	9.5	0.2	9.8	9.5	9.5
	702	UNFF	A 2	16.0	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1
	703	UNFF	A 3	25.9	0.2	10.0	9.8	9.8	0.2	10.0	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7
	704	UNFF	A 4	24.4	0.3	10.0	9.8	9.8	0.3	10.0	9.7	9.7	0.3	9.6	9.7	9.7	0.3	9.5	9.5	9.5	0.3	9.5	9.5	9.5
	705	UNFF	A 5	10.8	0.4	10.0	9.6	8.1	0.4	9.8	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9
	706	UNFF	B 1	9.0	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.7	9.9	9.3	9.3	0.7	9.7	9.2	9.2	0.7	9.7	9.2	9.2
	707	UNFF	B 2	7.4	0.6	10.0	9.2	7.2	0.6	9.1	9.1	7.1	0.9	9.1	8.8	6.9	0.9	8.7	8.6	6.7	0.9	8.7	8.6	6.7
	708	UNFF	B 3	19.7	0.2	10.0	9.9	9.9	0.2	9.9	9.8	9.8	0.2	9.6	9.7	9.7	0.2	9.5	9.6	9.6	0.2	9.5	9.6	9.6
	709	UNFF	B 4	19.1	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9
	710	UNFF	B 5	14.0	0.4	10.0	9.6	9.6	0.4	8.9	9.3	9.3	0.4	8.4	7.9	7.9	0.4	8.3	7.5	7.5	0.4	8.3	7.5	7.5
	711	UNFF	B 6	13.3	0.7	10.0	9.3	8.6	0.7	8.9	8.8	8.0	0.8	8.5	7.3	6.7	0.8	8.2	6.9	6.4	0.8	8.2	6.9	6.4
	712	UNFF	B 7	11.7	0.1	9.8	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	713	UNFF	B 8	12.1	0.5	10.0	9.6	9.6	0.5	8.8	9.3	9.3	0.5	8.3	7.6	7.6	0.5	8.2	7.5	7.5	0.5	8.2	7.5	7.5
	714	UNFF	B 9	10.8	0.2	10.0	9.7	9.7	0.2	9.3	9.5	9.5	0.3	9.0	8.5	8.5	0.3	8.8	8.1	8.1	0.3	8.8	8.1	8.1
	715	UNFF	B 10	13.9	0.6	9.2	9.2	7.4	0.6	8.1	7.7	6.3	1.1	6.6	5.3	4.3	0.9	6.4	4.9	4.1	0.9	6.4	4.9	4.1
	716	UNFF	C 1	16.4	0.1	10.0	9.8	9.8	0.1	9.6	9.7	9.7	0.1	9.4	9.2	9.2	0.1	9.2	8.8	8.8	0.1	9.2	8.8	8.8
	717	UNFF	C 2	9.1	0.4	10.0	9.7	9.7	0.4	9.0	9.4	9.4	0.4	8.5	7.9	7.9	0.4	8.5	7.8	7.8	0.4	8.5	7.8	7.8
	718	UNFF	C 3	7.8	0.8	10.0	9.4	9.4	0.8	9.2	8.8	8.8	0.8	8.9	7.8	7.8	0.8	8.6	7.5	7.5	0.8	8.6	7.5	7.5
	719	UNFF	C 4	6.9	0.7	10.0	9.4	5.5	0.7	8.2	8.8	5.2	1.2	7.5	5.9	3.7	1.1	7.2	5.8	3.6	1.1	6.9	5.8	3.7
	720	UNFF	C 5	13.2	0.5	10.0	9.2	9.1	0.5	8.6	8.8	8.7	0.5	8.1	7.0	6.9	0.5	7.8	6.8	6.7	0.5	7.8	6.8	6.7
	721	UNFF	C 6	10.2	0.2	10.0	9.3	6.9	0.2	9.5	9.0	6.8	0.2	9.3	8.4	6.3	0.2	9.0	8.4	6.3	0.2	9.0	8.4	6.3
	722	UNFF	C 7	12.4	0.1	10.0	9.9	9.9	0.1	9.8	9.8	9.8	0.3	9.2	9.6	9.6	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	723	UNFF	C 8	9.0	0.5	10.0	9.5	9.5	0.5	8.5	9.0	9.0	0.9	7.3	8.1	8.1	0.5	8.2	8.3	8.3	0.5	8.2	8.3	8.3
	724	UNFF	C 9	16.6	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	725	UNFF	C 10	9.8	0.6	10.0	9.3	9.3	0.6	8.6	8.8	8.8	0.6	8.0	6.9	6.9	0.6	7.9	6.9	6.9	0.6	7.9	6.9	6.9
	726	UNFF	C 11	10.0	0.1	10.0	9.9	9.9	0.1	10.0	9.8	9.8	0.1	10.0	9.8	9.8	0.9	9.6	8.6	8.6	0.9	9.6	8.6	8.6
	727	UNFF	C 12	9.2	0.5	10.0	9.6	9.6	0.5	8.7	9.3	9.2	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4
	728	LNFF	A 1	12.7	0.7	8.1	7.2	6.9	0.7	7.6	7.0	6.7	0.7	7.4	6.4	6.1	0.7	7.3	6.2	6.0	0.7	7.3	6.2	6.0
	729	LNFF	A 2	16.8	0.3	10.0	9.7	9.7	0.3	9.9	9.5	9.5	0.4	8.9	9.4	9.4	0.3	9.1	9.3	9.3	0.3	8.7	8.1	8.1
	730	LNFF	A 3	11.4	0.6	10.0	9.4	9.4	0.6	9.8	8.8	8.8	1.3	8.7	8.1	8.1	0.9	8.5	7.7	7.7	0.9	7.4	6.5	6.5
	731	LNFF	A 4	14.5	0.7	8.7	9.0	8.1	0.7	8.6	8.7	7.8	1.3	8.6	8.3	7.5	0.8	9.4	8.6	7.7	0.8	8.1	8.3	7.4
	732	LNFF	A 5	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	733	LNFF	A 6	12.6	0.5	10.0	9.5	9.5	0.5	8.9	8.2	8.2	0.8	8.3	7.9	7.9	0.5	8.6	7.8	7.8	0.5	8.6	7.8	7.8
	734	LNFF	A 7	10.9	0.6	9.8	9.1	9.1	0.6	7.4	6.2	6.2	1.1	5.7	4.1	4.1	0.8	6.2	4.4	4.4	0.8	6.2	4.4	4.4
	735	LNFF	A 8	11.3	0.7	10.0	9.4	7.8	0.7	7.2	6.0	5.1	0.7	7.2	6.1	5.1	0.7	7.0	5.7	4.8	0.7	7.0	5.7	4.8
	736	LNFF	A 9	9.6	0.7	9.5	8.7	8.6	0.7	8.6	7.6	7.5	0.7	7.6	7.6	7.5	0.7	7.5	7.2	7.1	0.9	7.1	6.3	6.2
	737	LNFF	A 10	18.9	0.8	8.5	7.5	7.4	0.8	7.7	6.5	6.4	1.5	6.0	4.6	4.5	1.1	5.7	4.3	4.2	1.1	5.5	3.5	3.4
	738	LNFF	A 11	9.9	0.8	9.8	9.1	6.7	0.8	8.3	7.1	5.3	1.1	7.3	6.9	5.2	1.0	7.1	6.7	5.0	1.1	7.2	5.8	4.4
	739	LNFF	A 12	13.9	0.7	9.6	8.8	7.5	0.7	7.9	7.4	6.3	1.0	7.2	7.0	6.0	0.7	7.8	7.2	6.2	0.7	7.8	7.2	6.2
	740	LNFF	A 13	8.5	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.4	5.0	0.4	8.7	8.4	5.0

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 2

					•EARLY SPRING SEASON •				• LATE SPRING SEASON •				• SUMMER SEASON •				• FALL SEASON •				• HUNTING SEASON •			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
HH	601	HGHS	A 1	27.0	0.0	10.0	10.0	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1
	602	HGHS	A 2	18.7	0.8	9.1	8.4	8.4	0.8	7.6	7.9	7.9	1.1	5.9	4.8	4.8	1.0	6.1	4.7	4.7	1.0	6.1	4.7	4.7
	603	HGHS	A 3	9.6	0.6	9.7	9.2	9.2	0.6	7.7	6.9	6.9	0.6	7.7	6.9	6.9	0.6	7.7	6.8	6.8	0.6	7.7	6.8	6.8
	604	HGHS	A 4	15.9	0.5	8.6	8.4	8.4	0.5	8.4	7.7	7.7	0.5	8.4	7.6	7.6	0.5	8.3	7.6	7.6	0.5	8.3	7.6	7.6
	605	HGHS	A 5	9.5	0.8	7.9	6.8	6.8	0.8	7.2	6.5	6.5	1.4	5.5	3.5	3.5	0.9	6.2	4.8	4.8	0.9	6.1	4.7	4.7
	606	HGHS	A 6	9.8	0.8	8.5	8.2	8.2	0.8	7.3	6.9	6.9	1.5	5.8	4.6	4.6	0.9	6.9	5.7	5.7	0.9	6.8	5.5	5.5
	607	HGHS	A 7	12.1	0.8	7.7	6.5	6.5	0.8	7.6	6.3	6.3	1.4	5.7	4.8	4.8	0.9	6.3	4.7	4.7	0.9	6.3	4.7	4.7
	608	SLVN	B 1	20.2	0.8	8.6	7.8	7.8	0.8	7.4	6.8	6.8	1.4	5.7	4.6	4.6	0.9	6.6	5.8	5.8	0.9	6.6	5.8	5.8
	609	SLVN	B 2	16.4	0.0	10.0	10.0	10.0	0.2	9.3	9.0	9.0	0.4	9.3	8.6	8.6	0.2	9.2	8.9	8.9	0.2	9.2	8.9	8.9
	610	SLVN	B 3	20.0	0.5	8.7	7.9	7.9	0.7	7.5	6.7	6.7	1.4	5.7	4.4	4.4	1.0	5.9	4.6	4.6	1.0	5.8	4.5	4.5
	611	HGHS	B 1	6.4	0.5	8.4	7.8	3.3	0.5	8.4	7.7	3.3	0.5	8.4	7.8	3.3	0.5	8.3	7.6	3.3	0.5	8.3	7.6	3.3
	612	HGHS	B 2	11.1	0.1	10.0	9.9	8.9	0.1	10.0	9.9	8.9	0.2	9.6	9.4	8.4	0.2	9.6	9.4	8.4	0.1	9.9	9.9	8.9
	613	HGHS	B 3	8.5	0.7	9.8	8.8	8.7	0.7	8.1	8.7	8.6	0.8	7.7	8.6	8.5	0.8	7.5	8.1	8.0	0.8	6.6	5.1	5.1
	614	HGHS	B 4	11.7	1.1	6.7	5.6	5.5	1.1	5.9	4.9	4.8	1.4	5.7	4.0	3.9	1.2	5.7	4.1	4.0	1.2	5.7	3.9	3.9
	615	HGHS	B 5	14.6	0.8	9.8	8.8	8.8	0.8	9.4	8.7	8.7	1.4	6.0	7.2	7.2	1.0	7.0	7.5	7.5	1.0	6.0	4.6	4.6
	616	HGHS	B 6	7.8	0.8	7.3	6.7	6.7	0.8	6.7	5.5	5.5	1.4	5.6	4.5	4.5	0.9	6.0	4.5	4.5	0.9	5.9	4.4	4.4
	617	HGHS	B 7	8.1	0.7	7.6	7.5	7.5	0.7	7.1	6.0	6.0	1.5	5.5	3.3	3.3	0.9	6.1	4.7	4.7	0.9	6.1	4.7	4.7
	618	HGHS	C 1	8.3	0.0	10.0	9.9	9.9	0.3	8.9	8.4	8.4	0.6	7.6	6.7	6.7	0.6	7.5	6.4	6.4	0.3	8.8	8.2	8.2
	619	HGHS	C 2	10.5	0.1	9.6	9.4	9.4	0.4	8.4	7.8	7.8	1.1	5.9	5.0	5.0	0.9	6.5	5.8	5.8	0.4	8.3	7.5	7.5
	620	HGHS	C 3	9.5	0.8	7.1	5.9	5.9	0.8	7.0	5.8	5.8	0.9	6.6	5.3	5.3	0.8	6.9	5.7	5.7	0.8	6.9	5.7	5.7
	621	HGHS	C 4	8.1	0.5	8.0	7.1	7.1	0.5	7.9	7.0	7.0	1.2	5.8	4.5	4.5	0.9	6.5	6.0	6.0	0.5	7.7	6.6	6.6
	622	HGHS	C 5	12.9	0.4	8.5	7.8	7.8	0.4	8.5	7.7	7.7	1.4	5.6	3.4	3.4	1.0	5.7	4.2	4.2	0.4	8.2	7.1	7.1
	623	SLVN	D 1	16.4	0.4	8.9	8.3	8.3	0.6	8.0	7.8	7.8	1.0	6.2	5.3	5.3	0.6	7.3	6.2	6.2	0.6	7.3	6.2	6.2
	624	LMFF	A 1	5.8	0.2	9.8	9.8	7.7	0.2	9.6	9.4	7.4	0.2	9.6	9.4	7.4	0.2	9.5	9.4	7.4	0.2	9.6	9.5	7.5
	625	LMFF	A 2	6.6	0.8	6.9	5.7	5.1	0.8	6.8	5.6	5.0	0.8	6.8	5.6	5.0	0.8	6.8	5.5	4.9	0.8	6.8	5.6	4.9
	626	LMFF	A 3	20.8	0.6	9.3	8.7	8.0	0.7	8.2	8.2	7.5	0.8	6.7	5.4	5.0	0.8	7.5	7.0	6.4	0.8	6.7	5.4	5.0
	627	LMFF	A 4	2.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	628	UMFF	A 1	9.2	1.0	6.5	5.1	4.5	1.0	6.3	4.8	4.3	1.0	6.3	4.8	4.3	1.0	6.3	5.0	4.4	1.0	6.3	5.0	4.4
	629	UMFF	A 2	9.8	0.2	9.3	8.9	8.9	0.8	9.1	8.1	8.1	0.8	7.6	8.1	8.1	0.8	7.6	7.9	7.9	0.8	7.3	7.0	7.0
	630	UMFF	A 3	17.5	0.0	10.0	9.9	9.9	0.6	9.7	9.2	9.2	0.6	7.9	7.7	7.7	0.6	7.8	7.5	7.5	0.6	7.8	7.5	7.5
	631	UMFF	A 4	16.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	9.9	9.9	9.9	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	632	UMFF	A 5	8.3	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SB	401	SLVN	C 1	22.0	0.4	10.0	9.7	9.7	0.4	8.7	8.1	8.1	0.4	8.6	8.1	8.1	0.4	8.6	7.9	7.9	0.4	8.6	7.9	7.9
	402	SLVN	C 2	21.2	0.4	10.0	9.7	9.7	0.4	9.0	9.1	9.1	0.4	8.4	7.8	7.8	0.4	8.5	7.8	7.8	0.4	8.5	7.8	7.8
	403	SLVN	C 3	19.5	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.9	9.7	9.7	0.0	9.9	9.7	9.7
	404	SLVN	C 4	10.2	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	405	SLVN	C 5	15.2	0.8	8.8	9.0	9.0	0.8	7.3	7.0	7.0	0.8	6.9	5.7	5.7	0.8	7.1	6.5	6.5	0.8	6.7	5.3	5.3
	406	SLVN	C 6	13.9	0.5	9.3	9.4	9.4	0.5	8.7	8.0	8.0	0.8	7.3	6.6	6.6	0.5	8.2	7.7	7.7	0.5	7.9	7.1	7.1

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 2

					EARLY SPRING SEASON				LATE SPRING SEASON				SUMMER SEASON				FALL SEASON				HUNTING SEASON			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SB	407	SLVN	D 2	10.8	0.0	10.0	9.9	9.9	0.8	8.2	7.0	7.0	1.2	5.9	4.3	4.3	1.0	6.6	6.6	6.6	1.0	5.9	4.6	4.6
	408	SLVN	D 3	10.0	0.0	10.0	10.0	10.0	0.7	7.3	6.3	6.3	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2
	409	BNKR	B 1	18.8	0.4	10.0	9.6	9.6	0.4	9.4	8.9	8.9	0.5	8.6	8.8	8.8	0.5	8.6	8.7	8.7	0.4	8.7	8.3	8.3
	410	BNKR	B 2	19.6	0.7	9.9	9.1	9.1	0.7	8.3	7.2	7.2	0.9	6.9	7.0	7.0	0.9	6.8	6.8	6.8	0.7	7.0	5.7	5.7
	411	BNKR	B 3	11.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	412	BNKR	B 4	16.5	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	413	BNKR	B 5	21.7	0.2	10.0	9.8	9.8	0.2	9.3	8.9	8.9	0.2	9.1	8.7	8.7	0.2	9.0	8.6	8.6	0.2	9.0	8.6	8.6
	414	BNKR	B 6	16.1	0.0	10.0	10.0	10.0	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.4	9.4	0.1	9.7	9.4	9.4
	415	BNKR	B 7	16.4	0.2	9.6	9.3	9.3	0.8	7.2	6.5	6.5	0.8	6.8	5.6	5.6	0.8	6.7	5.3	5.3	0.8	6.7	5.3	5.3
	416	BNKR	B 8	16.0	0.0	10.0	10.0	10.0	0.2	9.2	8.8	8.8	0.6	7.8	7.0	7.0	0.2	9.1	8.6	8.6	0.2	9.1	8.6	8.6
	417	BNKR	B 9	25.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.1	9.7	9.6	9.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	418	BNKR	B 10	3.5	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SL	102	HGHS	A 9	17.9	0.6	8.3	9.0	7.9	0.6	7.7	7.1	6.2	0.8	6.9	6.1	5.4	0.8	6.9	6.0	5.3	0.8	6.7	5.4	4.8
	104	SLVN	A 2	17.2	0.4	8.9	9.4	7.9	0.4	8.4	7.8	6.5	0.4	8.4	7.8	6.6	0.4	8.4	7.7	6.5	0.4	8.4	7.7	6.5
	107	SLVN	A 5	9.0	0.0	10.0	9.9	7.0	0.0	10.0	9.9	7.0	0.1	9.6	9.7	6.9	0.1	9.5	9.6	6.8	0.1	9.5	9.6	6.8
	109	SLVN	A 7	11.1	0.2	10.0	9.5	6.1	0.2	9.9	9.4	6.1	0.2	9.9	9.5	6.1	0.2	9.8	9.5	6.1	0.2	9.8	9.5	6.1
	110	BNKR	A 7	12.9	0.8	7.0	5.7	5.7	0.8	6.8	5.1	5.1	0.8	6.8	5.2	5.2	0.8	6.6	5.2	5.2	0.8	6.6	5.2	5.2
	111	SLVN	A 9	12.6	0.6	10.0	9.5	8.8	0.6	9.9	9.1	8.4	1.0	8.9	9.0	8.3	0.6	8.8	9.1	8.4	0.6	8.3	7.6	7.0
	112	SLVN	A 10	10.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	113	SLVN	A 11	15.3	0.3	10.0	9.8	9.8	0.3	10.0	9.7	9.7	0.8	8.9	8.1	8.1	0.3	8.9	8.4	8.4	0.3	8.9	8.4	8.4
	114	SLVN	A 12	6.1	0.7	9.2	9.2	5.6	0.7	8.3	7.7	4.8	1.2	8.0	7.2	4.5	0.8	7.8	7.2	4.5	0.8	7.7	7.2	4.5
	115	NMSR	A 1	10.6	1.4	9.4	8.8	7.2	1.4	7.4	5.5	4.6	1.4	6.2	5.4	4.5	1.4	6.1	5.4	4.5	1.4	5.9	5.4	4.5
	116	NMSR	A 2	20.9	1.6	10.0	8.8	8.8	1.6	8.3	6.6	6.6	1.6	7.9	6.3	6.3	1.6	7.4	6.1	6.1	1.6	6.3	6.1	6.1
	117	NMSR	A 3	10.4	1.7	8.4	8.1	7.9	1.7	5.6	4.1	4.0	1.7	5.5	3.1	3.0	1.7	5.2	2.8	2.8	1.7	5.0	2.8	2.8
	118	NMSR	A 4	10.4	1.9	10.0	8.5	8.0	1.9	7.6	6.9	6.5	1.9	5.6	4.4	4.2	1.9	5.4	4.0	3.9	1.9	5.0	2.7	2.6
	119	NMSR	A 5	10.9	1.5	8.1	8.3	8.3	1.5	7.1	5.1	5.1	1.7	6.1	4.4	4.4	1.7	5.9	4.2	4.2	1.7	5.5	4.0	4.0
	120	NMSR	A 6	11.3	1.9	9.7	8.2	7.9	1.9	9.3	7.3	7.0	1.9	8.0	6.3	6.0	1.9	7.6	7.1	6.8	1.9	6.7	4.8	4.6
	121	NMSR	A 7	16.4	0.8	9.8	8.5	8.5	0.8	9.8	8.4	8.4	1.5	9.7	7.6	7.6	0.9	9.4	8.2	8.2	0.9	9.4	8.2	8.2
	122	NMSR	A 8	17.9	0.7	9.7	8.6	8.1	0.7	9.6	8.6	8.1	1.4	9.5	7.8	7.4	1.0	9.3	8.3	7.8	1.0	9.2	8.0	7.6
	123	BNKR	A 1	15.4	0.4	10.0	9.6	9.6	0.4	10.0	9.5	9.5	0.5	8.7	8.0	8.0	0.4	8.6	8.0	8.0	0.4	8.6	8.0	8.0
	124	BNKR	A 2	14.0	0.5	10.0	9.5	9.5	0.5	10.0	9.5	9.5	0.5	8.9	8.2	8.2	0.5	8.8	8.2	8.2	0.5	8.8	8.2	8.2
	125	BNKR	A 3	15.4	0.8	7.6	6.1	5.9	0.8	7.6	6.1	5.9	1.4	6.8	5.0	4.8	1.0	6.5	5.0	4.8	1.0	6.4	5.0	4.8
	126	BNKR	A 4	35.9	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	127	BNKR	A 5	11.3	0.8	10.0	9.3	9.3	0.8	10.0	9.3	9.3	1.4	8.5	8.4	8.4	0.8	8.3	8.8	8.8	0.8	8.3	8.8	8.8
	128	BNKR	A 6	9.4	0.0	9.9	9.8	9.8	0.0	9.8	9.6	9.6	0.2	9.8	9.5	9.5	0.0	9.7	9.6	9.6	0.0	9.7	9.6	9.6
	129	BNKR	A 8	8.9	0.6	7.9	7.6	7.2	1.0	7.4	5.7	5.4	1.1	6.1	4.2	4.1	1.0	6.0	4.3	4.1	1.0	6.0	4.3	4.1
	130	BNKR	A 9	10.3	0.6	8.6	8.2	7.8	0.6	8.5	8.1	7.6	1.4	7.9	7.3	6.9	0.9	7.6	7.4	7.0	0.9	6.9	5.7	5.4
	131	SMSR	A 1	9.5	0.5	9.9	9.6	9.6	0.5	8.6	8.0	8.0	0.7	7.5	6.5	6.5	0.7	7.4	6.4	6.4	0.7	7.4	6.3	6.3
	132	SMSR	A 2	8.1	0.7	8.2	8.8	8.8	0.7	8.2	8.8	8.8	1.5	7.2	7.1	7.1	0.9	6.6	5.7	5.7	0.9	6.3	4.9	4.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 2

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SL	133	SMSR	A 3	8.8	0.8	7.8	7.3	6.3	0.8	7.8	7.3	6.3	1.2	7.7	7.0	6.0	0.9	7.6	7.0	6.0	0.9	7.3	5.9	5.1
	134	SMSR	A 4	8.6	0.8	9.2	8.5	8.5	0.8	9.1	8.4	8.4	1.3	8.1	6.9	6.9	0.9	7.4	5.9	5.9	0.9	6.9	5.9	5.9
	135	SMSR	A 5	9.5	1.0	10.0	8.2	8.2	1.0	8.5	7.1	7.1	1.5	6.7	4.5	4.5	1.0	6.3	4.7	4.7	1.0	6.4	4.7	4.7
	136	SMSR	A 6	11.4	0.9	8.1	6.8	5.8	0.9	6.5	4.9	4.3	1.5	6.4	4.6	4.0	1.0	6.1	4.7	4.1	1.0	6.2	4.7	4.1
	137	SMSR	B 1	11.2	0.7	10.0	9.1	9.1	0.7	9.5	8.9	8.9	1.1	8.6	8.6	8.6	0.9	8.4	8.7	8.7	0.9	8.6	7.8	7.8
	138	SMSR	B 2	11.0	0.8	9.9	8.6	6.3	0.8	8.8	8.5	6.2	1.2	8.8	8.4	6.2	1.0	8.5	8.2	6.0	1.0	9.2	8.2	6.0
	139	SMSR	B 3	11.1	0.7	10.0	9.2	7.1	0.7	8.5	7.6	5.9	1.3	8.5	7.2	5.6	0.7	8.3	7.4	5.7	0.7	8.2	7.4	5.7
	140	SMSR	B 4	18.7	0.7	10.0	9.2	9.1	0.7	8.7	7.6	7.6	1.5	8.6	6.9	6.9	0.7	8.3	7.2	7.1	0.7	7.0	5.9	5.8
	141	SMSR	B 5	12.7	0.6	10.0	9.4	9.1	0.6	8.7	7.7	7.5	1.4	7.9	7.2	7.0	0.6	7.8	7.6	7.3	0.6	7.4	6.3	6.1
	142	SMSR	B 6	8.5	0.7	10.0	9.4	6.7	0.7	8.2	7.2	5.2	1.3	8.2	6.7	4.9	0.7	8.0	6.9	5.1	0.7	7.6	6.5	4.8
	143	BGSM	A 1	33.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	144	BGSM	A 2	7.7	0.6	7.9	7.3	7.3	0.6	7.8	7.2	7.2	1.3	7.8	6.6	6.6	0.9	7.5	6.7	6.7	0.9	7.3	6.0	6.0
	145	BGSM	A 3	6.1	0.8	8.3	8.3	6.3	0.8	8.3	8.2	6.2	1.5	8.3	7.9	6.0	0.8	8.0	8.0	6.1	0.8	6.5	4.9	3.8
	146	BGSM	A 4	8.7	0.9	7.9	7.0	7.0	0.9	7.9	6.9	6.9	1.5	7.9	6.5	6.5	0.9	7.6	6.7	6.7	0.9	6.8	5.9	5.9
	147	BGSM	A 5	8.4	0.7	8.7	8.2	6.1	0.7	8.6	8.1	6.1	1.2	8.6	8.0	5.9	0.7	8.3	8.0	6.0	0.7	7.9	6.7	5.1
	148	BGSM	A 6	5.2	0.4	9.0	8.5	5.2	0.4	8.9	8.4	5.2	0.4	8.9	8.5	5.3	0.4	8.7	8.5	5.3	0.4	8.5	7.7	4.8
	149	BGSM	A 7	11.8	0.8	7.7	8.5	6.9	0.9	7.6	8.4	6.8	1.5	7.2	7.9	6.4	1.0	7.1	8.0	6.5	1.0	6.1	4.7	4.0
	150	BGSM	A 8	16.8	0.5	8.7	8.8	7.6	0.5	8.7	8.7	7.5	1.3	8.7	8.2	7.1	0.5	8.5	8.4	7.3	0.5	8.1	7.1	6.2
TL	828	WHIT	F SH	11.1	0.2	10.0	9.8	9.8	0.2	9.9	9.6	9.6	0.2	9.4	9.6	9.6	0.2	9.3	9.6	9.6	0.2	9.1	8.7	8.7
	829	BIG	O NT	15.2	0.5	10.0	9.6	9.1	0.5	9.9	9.3	8.8	0.5	9.8	9.2	8.7	0.5	8.6	9.2	8.7	0.5	8.0	7.3	6.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS,
HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 6

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (QRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
GV	701	UNFF	A 1	13.4	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	9.8	9.5	9.5	0.2	9.8	9.5	9.5
	702	UNFF	A 2	16.0	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1
	703	UNFF	A 3	25.9	0.2	10.0	9.8	9.8	0.2	10.0	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7
	704	UNFF	A 4	24.4	0.3	10.0	9.8	9.8	0.3	10.0	9.7	9.7	0.3	9.6	9.7	9.7	0.3	9.5	9.5	9.5	0.3	9.5	9.5	9.5
	705	UNFF	A 5	10.8	0.4	10.0	9.6	8.1	0.4	9.8	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9
	706	UNFF	B 1	9.0	0.7	10.0	9.5	9.5	0.7	9.9	9.2	9.2	0.7	9.9	9.3	9.3	0.7	9.7	9.2	9.2	0.7	9.7	9.2	9.2
	707	UNFF	B 2	7.4	0.9	10.0	9.0	7.0	0.9	9.1	8.9	6.9	0.9	9.1	8.8	6.9	0.9	8.7	8.6	6.7	0.9	8.7	8.6	6.7
	708	UNFF	B 3	19.7	0.2	10.0	9.9	9.9	0.2	9.9	9.8	9.8	0.2	9.6	9.7	9.7	0.2	9.5	9.6	9.6	0.2	9.5	9.6	9.6
	709	UNFF	B 4	19.1	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9
	710	UNFF	B 5	14.0	0.4	10.0	9.6	9.6	0.4	8.9	9.3	9.3	0.4	8.4	7.9	7.9	0.4	8.3	7.5	7.5	0.4	8.3	7.6	7.6
	711	UNFF	B 6	13.3	0.8	10.0	9.3	8.5	0.8	8.9	8.7	7.9	0.8	8.5	7.3	6.8	0.8	8.2	6.9	6.4	0.8	8.2	6.9	6.4
	712	UNFF	B 7	11.7	0.1	9.8	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	713	UNFF	B 8	12.1	0.5	10.0	9.6	9.6	0.5	8.8	9.3	9.3	0.5	8.3	7.6	7.6	0.5	8.2	7.5	7.5	0.5	8.2	7.5	7.5
	714	UNFF	B 9	10.8	0.3	10.0	9.7	9.7	0.3	9.3	9.4	9.4	0.3	9.0	8.5	8.5	0.3	8.8	8.1	8.1	0.3	8.8	8.1	8.1
	715	UNFF	B 10	13.9	0.9	9.1	8.9	7.2	0.9	7.1	7.1	5.8	0.9	6.6	5.4	4.4	0.9	6.3	4.9	4.1	0.9	6.4	4.9	4.1
	716	UNFF	C 1	16.4	0.1	10.0	9.8	9.8	0.1	9.6	9.7	9.7	0.1	9.4	9.2	9.2	0.1	9.2	8.8	8.8	0.1	9.2	8.8	8.8
	717	UNFF	C 2	9.1	0.4	10.0	9.7	9.7	0.4	9.0	9.4	9.4	0.4	8.5	7.9	7.9	0.4	8.5	7.8	7.8	0.4	8.5	7.8	7.8
	718	UNFF	C 3	7.8	0.8	10.0	9.4	9.4	0.8	9.2	8.8	8.8	0.8	8.9	7.8	7.8	0.8	8.6	7.5	7.5	0.8	8.6	7.5	7.5
	719	UNFF	C 4	6.9	1.1	10.0	9.1	5.4	1.1	8.2	8.4	5.0	1.1	7.5	6.0	3.7	1.1	7.2	5.8	3.6	1.1	6.9	5.8	3.7
	720	UNFF	C 5	13.2	0.5	10.0	9.2	9.1	0.5	8.6	8.8	8.7	0.5	8.1	7.0	6.9	0.5	7.8	6.8	6.7	0.5	7.8	6.8	6.7
	721	UNFF	C 6	10.2	0.2	10.0	9.3	6.9	0.2	9.5	9.0	6.8	0.2	9.3	8.4	6.3	0.2	9.0	8.4	6.3	0.2	9.0	8.4	6.3
	722	UNFF	C 7	12.4	0.1	10.0	9.9	9.9	0.1	9.8	9.8	9.8	0.5	9.2	9.3	9.3	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	723	UNFF	C 8	9.0	0.5	10.0	9.5	9.5	0.5	8.5	9.0	9.0	0.9	7.3	8.1	8.1	0.5	8.2	8.3	8.3	0.5	8.2	8.3	8.3
	724	UNFF	C 9	16.6	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	725	UNFF	C 10	9.8	0.6	10.0	9.3	9.3	0.6	8.6	8.8	8.8	0.6	8.0	6.9	6.9	0.6	7.9	6.9	6.9	0.6	7.9	6.9	6.9
	726	UNFF	C 11	10.0	0.8	10.0	9.4	9.4	0.8	9.8	8.7	8.7	0.8	9.8	8.7	8.7	0.8	9.6	8.7	8.7	0.8	9.6	8.7	8.7
	727	UNFF	C 12	9.2	0.5	10.0	9.6	9.6	0.5	8.7	9.3	9.2	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4
	728	LNFF	A 1	12.7	0.7	8.1	7.2	6.9	0.7	7.6	7.0	6.7	0.7	7.4	6.4	6.1	0.7	7.3	6.2	6.0	0.7	7.3	6.2	6.0
	729	LNFF	A 2	16.8	0.3	10.0	9.7	9.7	0.3	9.9	9.5	9.5	0.3	9.1	9.5	9.5	0.3	9.1	9.3	9.3	0.3	8.7	8.1	8.1
	730	LNFF	A 3	11.4	0.9	10.0	9.2	9.2	0.9	9.8	8.6	8.6	0.9	8.9	8.5	8.5	0.9	8.5	7.8	7.8	0.9	7.5	6.5	6.5
	731	LNFF	A 4	14.5	0.8	8.7	9.0	8.0	0.8	8.6	8.8	7.9	0.7	9.8	9.1	8.1	0.7	9.4	8.7	7.8	0.8	8.3	8.4	7.5
	732	LNFF	A 5	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	733	LNFF	A 6	12.6	0.5	10.0	9.5	9.5	0.5	8.9	8.0	8.0	0.5	8.2	8.1	8.1	0.5	8.0	7.6	7.6	0.5	8.0	7.6	7.6
	734	LNFF	A 7	10.9	1.1	9.8	8.8	8.8	1.1	5.7	4.0	4.0	1.1	5.7	4.1	4.1	1.1	5.3	3.7	3.7	1.1	5.3	3.7	3.7
	735	LNFF	A 8	11.3	0.7	10.0	9.4	7.8	0.7	7.2	6.0	5.1	0.7	7.2	6.1	5.1	0.7	7.0	5.7	4.8	0.7	7.0	5.7	4.8
	736	LNFF	A 9	9.6	0.7	9.5	8.7	8.6	0.7	8.6	7.6	7.5	0.9	7.6	7.5	7.3	0.9	7.4	7.1	7.0	0.7	7.2	6.4	6.3
	737	LNFF	A 10	18.9	1.1	8.5	7.3	7.2	1.1	6.6	4.9	4.9	1.1	6.1	5.0	4.9	1.1	5.8	4.3	4.2	1.1	5.6	3.6	3.5
	738	LNFF	A 11	9.9	1.2	9.8	8.8	6.5	1.2	7.8	6.8	5.1	1.9	7.3	6.3	4.7	1.6	6.9	6.4	4.8	1.2	6.8	5.7	4.3
	739	LNFF	A 12	13.9	0.8	9.4	8.5	7.2	0.8	7.6	7.0	6.0	1.1	7.6	6.8	5.8	0.8	7.4	6.9	5.9	0.8	7.4	6.9	5.9
	740	LNFF	A 13	8.5	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.4	5.0	0.4	8.7	8.4	5.0

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER. FLATHEAD NATIONAL FOREST

ALTERNATIVE 6

RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	•EARLY SPRING SEASON •				• LATE SPRING SEASON •				• SUMMER SEASON •				• FALL SEASON •				• HUNTING SEASON •			
					HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
HH	601	HGHS	A 1	27.0	0.0	10.0	10.0	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1
	602	HGHS	A 2	18.7	1.0	9.1	8.2	8.2	1.0	6.9	6.9	6.9	1.0	6.2	4.9	4.9	1.0	6.1	4.7	4.7	1.0	6.1	4.7	4.7
	603	HGHS	A 3	9.6	0.6	9.7	9.2	9.2	0.6	7.7	6.9	6.9	0.6	7.7	6.9	6.9	0.6	7.7	6.8	6.8	0.6	7.7	6.8	6.8
	604	HGHS	A 4	15.9	0.5	8.6	8.4	8.4	0.5	8.4	7.7	7.7	0.5	8.4	7.6	7.6	0.5	8.3	7.6	7.6	0.5	8.3	7.6	7.6
	605	HGHS	A 5	9.5	0.9	7.9	6.6	6.6	0.9	6.9	6.3	6.3	0.9	6.3	5.1	5.1	0.9	6.2	4.8	4.8	0.9	6.1	4.7	4.7
	606	HGHS	A 6	9.8	0.9	8.5	8.1	8.1	0.9	7.3	6.8	6.8	0.9	7.0	5.8	5.8	0.9	6.9	5.7	5.7	0.9	6.8	5.5	5.5
	607	HGHS	A 7	12.1	0.9	7.7	6.4	6.4	0.9	7.5	6.1	6.1	0.9	6.7	6.2	6.2	0.9	6.0	4.5	4.5	0.9	6.0	4.5	4.5
	608	SLVN	B 1	20.2	0.9	8.6	7.7	7.7	0.9	7.5	6.7	6.7	0.9	6.6	6.0	6.0	0.9	6.6	5.8	5.8	0.9	6.6	5.8	5.8
	609	SLVN	B 2	16.4	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.4	9.3	8.6	8.6	0.2	9.2	8.9	8.9	0.2	9.2	8.9	8.9
	610	SLVN	B 3	20.0	0.5	8.7	7.9	7.9	0.5	8.2	7.6	7.6	0.8	6.6	5.6	5.6	0.8	6.5	5.1	5.1	0.8	6.4	5.0	5.0
	611	HGHS	B 1	6.4	0.5	8.4	7.8	3.3	0.5	8.4	7.7	3.3	0.5	8.4	7.8	3.3	0.5	8.3	7.6	3.3	0.5	8.3	7.6	3.3
	612	HGHS	B 2	11.1	0.1	10.0	9.9	8.9	0.1	10.0	9.9	8.9	0.2	9.6	9.4	8.4	0.2	9.6	9.4	8.4	0.1	9.9	9.9	8.9
	613	HGHS	B 3	8.5	0.7	9.8	8.8	8.7	0.7	8.1	8.7	8.6	0.8	7.7	8.6	8.5	0.8	7.5	8.1	8.0	0.8	6.6	5.1	5.1
	614	HGHS	B 4	11.7	1.1	6.7	5.6	5.5	1.1	5.9	4.9	4.8	1.4	5.7	4.0	3.9	1.2	5.7	4.1	4.0	1.2	5.7	3.9	3.9
	615	HGHS	B 5	14.6	1.0	9.4	8.5	8.5	1.0	8.7	7.7	7.7	1.0	7.1	7.8	7.8	1.0	7.0	7.5	7.5	1.0	6.0	4.6	4.6
	616	HGHS	B 6	7.8	0.9	6.9	6.5	6.5	0.9	6.3	4.8	4.8	0.9	6.3	4.9	4.9	0.9	6.0	4.5	4.5	0.9	5.9	4.4	4.4
	617	HGHS	B 7	8.1	0.9	6.9	7.1	7.1	0.9	6.2	4.8	4.8	0.9	6.2	4.9	4.9	0.9	6.1	4.7	4.7	0.9	6.1	4.7	4.7
	618	HGHS	C 1	8.3	0.0	10.0	9.9	9.9	0.3	8.9	8.4	8.4	0.6	7.6	6.7	6.7	0.6	7.5	6.4	6.4	0.3	8.8	8.2	8.2
	619	HGHS	C 2	10.5	0.1	9.6	9.4	9.4	0.4	8.4	7.8	7.8	1.0	6.5	5.9	5.9	0.9	6.5	5.8	5.8	0.4	8.3	7.5	7.5
	620	HGHS	C 3	9.5	0.8	7.1	5.9	5.9	0.8	7.0	5.8	5.8	0.8	7.0	5.9	5.9	0.8	6.9	5.7	5.7	0.8	6.9	5.7	5.7
	621	HGHS	C 4	8.1	0.5	8.0	7.1	7.1	0.5	7.9	7.0	7.0	0.9	6.2	4.8	4.8	0.9	6.5	6.0	6.0	0.5	7.7	6.6	6.6
	622	HGHS	C 5	12.9	0.4	8.5	7.8	7.8	0.4	8.5	7.7	7.7	1.0	5.9	4.6	4.6	1.0	5.7	4.2	4.2	0.4	8.2	7.1	7.1
	623	SLVN	D 1	16.4	0.4	8.9	8.3	8.3	0.6	8.0	7.8	7.8	0.6	7.4	6.5	6.5	0.6	7.3	6.2	6.2	0.6	7.3	6.2	6.2
	624	LMFF	A 1	5.8	0.2	9.8	9.8	7.7	0.2	9.6	9.4	7.4	0.2	9.6	9.4	7.4	0.2	9.5	9.4	7.4	0.2	9.6	9.5	7.5
	625	LMFF	A 2	6.6	0.8	6.9	5.7	5.1	0.8	6.8	5.6	5.0	0.8	6.8	5.6	5.0	0.8	6.8	5.5	4.9	0.8	6.8	5.6	4.9
	626	LMFF	A 3	20.8	0.6	9.3	8.7	8.0	0.7	8.2	8.2	7.5	0.8	6.7	5.4	5.0	0.8	7.5	7.0	6.4	0.8	6.7	5.4	5.0
	627	LMFF	A 4	2.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	628	UMFF	A 1	9.2	1.0	6.5	5.1	4.5	1.0	6.3	4.8	4.3	1.0	6.3	4.8	4.3	1.0	6.3	5.0	4.4	1.0	6.3	5.0	4.4
	629	UMFF	A 2	9.8	0.2	9.3	8.9	8.9	0.8	9.1	8.1	8.1	0.8	7.6	8.1	8.1	0.8	7.6	7.9	7.9	0.8	7.3	7.0	7.0
	630	UMFF	A 3	17.5	0.0	10.0	9.9	9.9	0.6	9.7	9.2	9.2	0.6	7.9	7.7	7.7	0.6	7.8	7.5	7.5	0.6	7.8	7.5	7.5
	631	UMFF	A 4	16.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	9.9	9.9	9.9	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	632	UMFF	A 5	8.3	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SB	401	SLVN	C 1	22.0	0.4	10.0	9.7	9.7	0.4	8.7	8.1	8.1	0.4	8.6	8.1	8.1	0.4	8.6	7.9	7.9	0.4	8.6	7.9	7.9
	402	SLVN	C 2	21.2	0.4	10.0	9.7	9.7	0.4	9.0	9.1	9.1	0.4	8.6	8.0	8.0	0.4	8.4	7.7	7.7	0.4	8.4	7.7	7.7
	403	SLVN	C 3	19.5	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.9	9.7	9.7	0.0	9.9	9.7	9.7
	404	SLVN	C 4	10.2	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	405	SLVN	C 5	15.2	0.8	8.8	9.0	9.0	0.8	7.3	7.0	7.0	0.8	6.9	5.7	5.7	0.8	7.1	6.5	6.5	0.8	6.7	5.3	5.3
	406	SLVN	C 6	13.9	0.5	9.3	9.4	9.4	0.5	8.7	8.0	8.0	0.8	7.4	6.7	6.7	0.5	8.2	7.7	7.7	0.5	7.9	7.1	7.1

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER. FLATHEAD NATIONAL FOREST

ALTERNATIVE 6

					EARLY SPRING SEASON				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SB	407	SLVN	D 2	10.8	0.0	10.0	9.9	9.9	1.0	8.2	6.8	6.8	1.0	6.0	4.7	4.7	1.0	6.6	6.6	6.6	1.0	6.0	4.6	4.6
	408	SLVN	D 3	10.0	0.0	10.0	10.0	10.0	0.7	7.3	6.3	6.3	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2
	409	BNKR	B 1	18.8	0.4	10.0	9.6	9.6	0.4	9.4	8.9	8.9	0.5	8.6	8.8	8.8	0.5	8.6	8.7	8.7	0.4	8.7	8.3	8.3
	410	BNKR	B 2	19.6	0.7	9.9	9.1	9.1	0.7	8.3	7.2	7.2	0.9	6.9	7.0	7.0	0.9	6.8	6.8	6.8	0.7	7.0	5.7	5.7
	411	BNKR	B 3	11.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	412	BNKR	B 4	16.5	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	413	BNKR	B 5	21.7	0.2	10.0	9.8	9.8	0.2	9.3	8.9	8.9	0.2	9.1	8.7	8.7	0.2	9.0	8.6	8.6	0.2	9.0	8.6	8.6
	414	BNKR	B 6	16.1	0.0	9.9	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.4	9.4	0.1	9.7	9.4	9.4
	415	BNKR	B 7	16.4	0.2	9.6	9.3	9.3	0.8	7.2	6.5	6.5	0.8	6.8	5.6	5.6	0.8	6.7	5.3	5.3	0.8	6.7	5.3	5.3
	416	BNKR	B 8	16.0	0.0	10.0	10.0	10.0	0.2	9.2	8.8	8.8	0.6	7.8	7.0	7.0	0.2	9.1	8.6	8.6	0.2	9.1	8.6	8.6
	417	BNKR	B 9	25.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.1	9.7	9.6	9.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	418	BNKR	B 10	3.5	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SL	102	HGHS	A 9	17.9	0.6	8.3	9.0	7.9	0.6	7.7	7.1	6.2	0.8	6.9	6.1	5.4	0.8	6.9	6.0	5.3	0.8	6.7	5.4	4.8
	104	SLVN	A 2	17.2	0.4	8.9	9.4	7.9	0.4	8.4	7.8	6.5	0.4	8.4	7.8	6.6	0.4	8.4	7.7	6.5	0.4	8.4	7.7	6.5
	107	SLVN	A 5	9.0	0.0	10.0	9.9	7.0	0.0	10.0	9.9	7.0	0.1	9.6	9.7	6.9	0.1	9.5	9.6	6.8	0.1	9.5	9.6	6.8
	109	SLVN	A 7	11.1	0.2	10.0	9.5	6.1	0.2	9.9	9.4	6.1	0.2	9.9	9.5	6.1	0.2	9.8	9.5	6.1	0.2	9.8	9.5	6.1
	110	BNKR	A 7	12.9	0.8	7.0	5.7	5.7	0.8	6.8	5.1	5.1	0.8	6.8	5.2	5.2	0.8	6.6	5.2	5.2	0.8	6.6	5.2	5.2
	111	SLVN	A 9	12.6	0.6	10.0	9.5	8.8	0.6	9.9	9.1	8.4	0.6	8.9	9.2	8.5	0.6	8.8	9.1	8.4	0.6	8.3	7.6	7.0
	112	SLVN	A 10	10.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	113	SLVN	A 11	15.3	0.3	10.0	9.8	9.8	0.3	9.9	9.5	9.5	0.3	8.9	8.5	8.5	0.3	8.9	8.4	8.4	0.3	8.9	8.4	8.4
	114	SLVN	A 12	6.1	0.8	8.7	9.0	5.5	0.8	8.2	7.4	4.6	0.8	8.0	7.5	4.7	0.8	7.8	7.2	4.5	0.8	7.7	7.2	4.5
	115	NMSR	A 1	10.6	1.4	9.4	8.8	7.2	1.4	7.4	5.5	4.6	1.4	6.2	5.4	4.5	1.4	6.1	5.4	4.5	1.4	5.9	5.4	4.5
	116	NMSR	A 2	20.9	1.6	10.0	8.8	8.8	1.6	8.3	6.6	6.6	1.6	7.9	6.4	6.4	1.6	7.4	6.1	6.1	1.6	6.3	6.1	6.1
	117	NMSR	A 3	10.4	2.0	8.4	7.9	7.7	2.0	5.6	4.0	3.9	2.0	5.5	3.0	2.9	2.0	5.2	2.7	2.7	2.0	5.0	2.7	2.7
	118	NMSR	A 4	10.4	1.9	10.0	8.4	8.0	1.9	7.6	6.8	6.5	1.9	5.6	4.4	4.2	1.9	5.4	4.0	3.8	1.9	5.0	2.7	2.6
	119	NMSR	A 5	10.9	1.7	7.6	8.1	8.1	1.7	6.5	4.5	4.5	1.7	6.1	4.4	4.4	1.7	5.9	4.2	4.2	1.7	5.5	4.0	4.0
	120	NMSR	A 6	11.3	1.9	9.7	8.2	7.9	1.9	9.3	7.3	7.0	1.9	8.0	6.3	6.0	1.9	7.6	7.1	6.8	1.9	6.7	4.8	4.6
	121	NMSR	A 7	16.4	0.9	9.8	8.3	8.3	0.9	9.8	8.2	8.2	0.9	9.8	8.3	8.3	0.9	9.4	8.2	8.2	0.9	9.4	8.2	8.2
	122	NMSR	A 8	17.9	1.0	9.6	8.3	7.9	1.0	9.6	8.3	7.8	1.0	9.6	8.3	7.8	1.0	9.3	8.3	7.8	1.0	9.2	8.0	7.6
	123	BNKR	A 1	15.4	0.4	9.1	9.3	9.3	0.4	8.7	8.0	8.0	0.4	8.7	8.0	8.0	0.4	8.6	8.0	8.0	0.4	8.6	8.0	8.0
	124	BNKR	A 2	14.0	0.5	10.0	9.5	9.5	0.5	9.1	8.4	8.4	0.5	8.9	8.2	8.2	0.5	8.8	8.2	8.2	0.5	8.8	8.2	8.2
	125	BNKR	A 3	15.4	1.0	7.4	5.9	5.7	1.0	7.0	5.2	5.0	1.0	6.7	5.1	5.0	1.0	6.5	5.0	4.8	1.0	6.4	5.0	4.8
	126	BNKR	A 4	35.9	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	127	BNKR	A 5	11.3	0.8	10.0	9.3	9.3	0.8	10.0	9.3	9.3	0.8	8.5	8.9	8.9	0.8	8.3	8.8	8.8	0.8	8.3	8.8	8.8
	128	BNKR	A 6	9.4	0.0	9.9	9.8	9.8	0.0	9.8	9.6	9.6	0.0	9.8	9.6	9.6	0.0	9.7	9.6	9.6	0.0	9.7	9.6	9.6
	129	BNKR	A 8	8.9	1.0	7.0	7.1	6.7	1.0	6.1	4.3	4.1	1.0	6.1	4.3	4.1	1.0	6.0	4.3	4.1	1.0	6.0	4.3	4.1
	130	BNKR	A 9	10.3	0.9	8.6	8.0	7.5	0.9	7.9	7.7	7.2	0.9	7.9	7.7	7.3	0.9	7.7	7.5	7.1	0.9	7.0	5.8	5.5
	131	SMSR	A 1	9.5	0.5	9.9	9.6	9.6	0.5	8.6	8.0	8.0	0.7	7.5	6.5	6.5	0.7	7.4	6.4	6.4	0.7	7.4	6.3	6.3
	132	SMSR	A 2	8.1	0.7	8.2	8.8	8.8	0.7	8.2	8.8	8.8	0.9	7.2	7.5	7.5	0.9	6.6	5.7	5.7	0.9	6.3	4.9	4.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 6

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN-SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SL	133	SMSR	A 3	8.8	0.9	7.8	7.3	6.3	0.9	7.7	7.2	6.2	0.9	7.7	7.1	6.1	0.9	7.6	7.0	6.0	0.9	7.3	5.9	5.1
	134	SMSR	A 4	8.6	0.9	9.2	8.4	8.4	0.9	8.5	8.1	8.1	0.9	8.1	7.2	7.2	0.9	7.4	5.9	5.9	0.9	6.9	5.9	5.9
	135	SMSR	A 5	9.5	1.0	10.0	8.2	8.2	1.0	7.4	6.8	6.8	1.0	6.7	4.8	4.8	1.0	6.3	4.7	4.7	1.0	6.4	4.7	4.7
	136	SMSR	A 6	11.4	1.0	8.1	6.8	5.7	1.0	6.4	4.8	4.2	1.0	6.4	4.8	4.2	1.0	6.1	4.7	4.1	1.0	6.2	4.7	4.1
	137	SMSR	B 1	11.2	0.9	10.0	8.9	8.9	0.9	9.2	8.7	8.7	0.9	8.6	8.7	8.7	0.9	8.4	8.7	8.7	0.9	8.6	7.8	7.8
	138	SMSR	B 2	11.0	1.0	9.9	8.4	6.2	1.0	8.8	8.2	6.1	1.0	8.8	8.3	6.1	1.0	8.5	8.2	6.0	1.0	9.2	8.2	6.0
	139	SMSR	B 3	11.1	0.7	10.0	9.2	7.1	0.7	8.5	7.6	5.9	0.7	8.5	7.6	5.9	0.7	8.3	7.4	5.7	0.7	8.2	7.4	5.7
	140	SMSR	B 4	18.7	0.7	10.0	9.2	9.1	0.7	8.7	7.6	7.6	0.7	8.6	7.4	7.4	0.7	8.3	7.2	7.1	0.7	7.0	5.9	5.8
	141	SMSR	B 5	12.7	0.6	10.0	9.4	9.1	0.6	8.7	7.7	7.5	0.6	7.9	7.8	7.6	0.6	7.8	7.6	7.3	0.6	7.4	6.3	6.1
	142	SMSR	B 6	8.5	0.7	10.0	9.4	6.7	0.7	8.2	7.2	5.2	0.7	8.2	7.2	5.2	0.7	8.0	6.9	5.1	0.7	7.6	6.5	4.8
	143	BGSM	A 1	33.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	144	BGSM	A 2	7.7	0.9	7.8	6.9	6.9	0.9	7.8	6.8	6.8	0.9	7.8	6.9	6.9	0.9	7.5	6.7	6.7	0.9	7.3	5.8	5.8
	145	BGSM	A 3	6.1	0.8	8.3	8.3	6.3	0.8	8.3	8.2	6.2	0.8	8.3	8.3	6.3	0.8	8.0	8.0	6.1	0.8	6.5	4.9	3.8
	146	BGSM	A 4	8.7	0.9	7.9	7.0	7.0	0.9	7.9	6.9	6.9	0.9	7.9	7.0	7.0	0.9	7.6	6.7	6.7	0.9	6.8	5.9	5.9
	147	BGSM	A 5	8.4	0.7	8.7	8.2	6.1	0.7	8.6	8.1	6.1	0.7	8.6	8.3	6.2	0.7	8.3	8.0	6.0	0.7	7.9	6.7	5.1
	148	BGSM	A 6	5.2	0.4	9.0	8.5	5.2	0.4	8.9	8.4	5.2	0.4	8.9	8.5	5.3	0.4	8.7	8.5	5.3	0.4	8.5	7.7	4.8
	149	BGSM	A 7	11.8	1.0	7.3	8.3	6.7	1.0	7.2	8.2	6.7	1.0	7.2	8.3	6.7	1.0	7.1	8.0	6.5	1.0	6.1	4.8	4.0
	150	BGSM	A 8	16.8	0.5	8.7	8.8	7.6	0.5	8.7	8.7	7.5	0.5	8.7	8.8	7.6	0.5	8.5	8.4	7.3	0.5	8.1	7.1	6.2
TL	828	WHIT	F SH	11.1	0.2	10.0	9.8	9.8	0.2	9.9	9.6	9.6	0.2	9.4	9.6	9.6	0.2	9.3	9.6	9.6	0.2	9.1	8.7	8.7
	829	BIG	O NT	15.2	0.5	10.0	9.6	9.1	0.5	9.9	9.3	8.8	0.5	9.8	9.2	8.7	0.5	8.6	9.2	8.7	0.5	8.0	7.3	6.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER
FLATHEAD NATIONAL FOREST

ALTERNATIVE 8

					EARLY SPRING SEASON				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
GV	701	UNFF	A 1	13.4	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	10.0	9.8	9.8	0.2	9.8	9.5	9.5	0.2	9.8	9.5	9.5
	702	UNFF	A 2	16.0	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1	0.0	10.0	9.9	8.1
	703	UNFF	A 3	25.9	0.2	10.0	9.8	9.8	0.2	10.0	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7	0.2	9.4	9.7	9.7
	704	UNFF	A 4	24.4	0.3	10.0	9.8	9.8	0.3	10.0	9.7	9.7	0.3	9.6	9.7	9.7	0.3	9.5	9.5	9.5	0.3	9.5	9.5	9.5
	705	UNFF	A 5	10.8	0.4	10.0	9.6	8.1	0.4	9.8	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9	0.4	9.1	9.4	7.9
	706	UNFF	B 1	9.0	0.7	10.0	9.5	9.5	0.7	9.9	9.2	9.2	0.7	9.9	9.3	9.3	0.7	9.7	9.2	9.2	0.7	9.7	9.2	9.2
	707	UNFF	B 2	7.4	0.9	10.0	9.0	7.0	0.9	9.1	8.9	6.9	0.9	9.1	8.8	6.9	0.9	8.7	8.6	6.7	0.9	8.7	8.6	6.7
	708	UNFF	B 3	19.7	0.2	10.0	9.9	9.9	0.2	9.9	9.8	9.8	0.2	9.6	9.7	9.7	0.2	9.5	9.6	9.6	0.2	9.5	9.6	9.6
	709	UNFF	B 4	19.1	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9
	710	UNFF	B 5	14.0	0.4	10.0	9.6	9.6	0.4	8.9	9.3	9.3	0.4	8.4	7.9	7.9	0.4	8.3	7.5	7.5	0.4	8.3	7.6	7.6
	711	UNFF	B 6	13.3	0.8	10.0	9.3	8.5	0.8	8.9	8.7	7.9	0.8	8.5	7.3	6.8	0.8	8.2	6.9	6.4	0.8	8.2	6.9	6.4
	712	UNFF	B 7	11.7	0.1	9.8	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	713	UNFF	B 8	12.1	0.5	10.0	9.6	9.6	0.5	8.8	9.3	9.3	0.5	8.3	7.6	7.6	0.5	8.2	7.5	7.5	0.5	8.2	7.5	7.5
	714	UNFF	B 9	10.8	0.3	10.0	9.7	9.7	0.3	9.3	9.4	9.4	0.3	9.0	8.5	8.5	0.3	8.8	8.1	8.1	0.3	8.8	8.1	8.1
	715	UNFF	B 10	13.9	0.9	9.1	8.9	7.2	0.9	7.1	7.1	5.8	0.9	6.6	5.4	4.4	0.9	6.3	4.9	4.1	0.9	6.4	4.9	4.1
	716	UNFF	C 1	16.4	0.1	10.0	9.8	9.8	0.1	9.6	9.7	9.7	0.1	9.4	9.2	9.2	0.1	9.2	8.8	8.8	0.1	9.2	8.8	8.8
	717	UNFF	C 2	9.1	0.4	10.0	9.7	9.7	0.4	9.0	9.4	9.4	0.4	8.5	7.9	7.9	0.4	8.5	7.8	7.8	0.4	8.5	7.8	7.8
	718	UNFF	C 3	7.8	0.8	10.0	9.4	9.4	0.8	9.2	8.8	8.8	0.8	8.9	7.8	7.8	0.8	8.6	7.5	7.5	0.8	8.6	7.5	7.5
	719	UNFF	C 4	6.9	1.1	10.0	9.1	5.4	1.1	8.2	8.4	5.0	1.1	7.5	6.0	3.7	1.1	7.2	5.8	3.6	1.1	6.9	5.8	3.7
	720	UNFF	C 5	13.2	0.5	10.0	9.2	9.1	0.5	8.6	8.8	8.7	0.5	8.1	7.0	6.9	0.5	7.8	6.8	6.7	0.5	7.8	6.8	6.7
	721	UNFF	C 6	10.2	0.2	10.0	9.3	6.9	0.2	9.5	9.0	6.8	0.2	9.3	8.4	6.3	0.2	9.0	8.4	6.3	0.2	9.0	8.4	6.3
	722	UNFF	C 7	12.4	0.1	10.0	9.9	9.9	0.1	9.8	9.8	9.8	0.5	9.2	9.3	9.3	0.1	9.7	9.5	9.5	0.1	9.7	9.5	9.5
	723	UNFF	C 8	9.0	0.5	10.0	9.5	9.5	0.5	8.5	9.0	9.0	0.9	7.3	8.1	8.1	0.5	8.2	8.3	8.3	0.5	8.2	8.3	8.3
	724	UNFF	C 9	16.6	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	725	UNFF	C 10	9.8	0.6	10.0	9.3	9.3	0.6	8.6	8.8	8.8	0.6	8.0	6.9	6.9	0.6	7.9	6.9	6.9	0.6	7.9	6.9	6.9
	726	UNFF	C 11	10.0	0.8	10.0	9.4	9.4	0.8	9.8	8.7	8.7	0.8	9.8	8.7	8.7	0.8	9.6	8.7	8.7	0.8	9.6	8.7	8.7
	727	UNFF	C 12	9.2	0.5	10.0	9.6	9.6	0.5	8.7	9.3	9.2	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4	0.5	8.1	7.4	7.4
	728	LNFF	A 1	12.7	0.7	8.1	7.2	6.9	0.7	7.6	7.0	6.7	0.7	7.4	6.4	6.1	0.7	7.3	6.2	6.0	0.7	7.3	6.2	6.0
	729	LNFF	A 2	16.8	0.3	10.0	9.7	9.7	0.3	9.9	9.5	9.5	0.3	9.1	9.5	9.5	0.3	9.1	9.3	9.3	0.3	8.7	8.1	8.1
	730	LNFF	A 3	11.4	0.9	10.0	9.2	9.2	0.9	9.8	8.6	8.6	0.9	8.9	8.5	8.5	0.9	8.5	7.8	7.8	0.9	7.5	6.5	6.5
	731	LNFF	A 4	14.5	0.8	8.7	9.0	8.0	0.8	8.6	8.8	7.9	0.7	9.8	9.1	8.1	0.7	9.4	8.7	7.8	0.8	8.3	8.4	7.5
	732	LNFF	A 5	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.8	9.5	9.5	0.0	9.8	9.5	9.5
	733	LNFF	A 6	12.6	0.5	10.0	9.5	9.5	0.5	8.9	8.0	8.0	0.5	8.2	8.1	8.1	0.5	8.0	7.6	7.6	0.5	8.0	7.6	7.6
	734	LNFF	A 7	10.9	1.1	9.8	8.8	8.8	1.1	5.7	4.0	4.0	1.1	5.7	4.1	4.1	1.1	5.3	3.7	3.7	1.1	5.3	3.7	3.7
	735	LNFF	A 8	11.3	0.7	10.0	9.4	7.8	0.7	7.2	6.0	5.1	0.7	7.2	6.1	5.1	0.7	7.0	5.7	4.8	0.7	7.0	5.7	4.8
	736	LNFF	A 9	9.6	0.7	9.5	8.7	8.6	0.7	8.6	7.6	7.5	0.7	7.6	7.6	7.5	0.7	7.5	7.2	7.1	0.9	6.7	6.1	6.0
	737	LNFF	A 10	18.9	1.1	8.5	7.3	7.2	1.1	6.6	4.9	4.9	1.1	6.1	5.0	4.9	1.1	5.8	4.3	4.2	1.1	5.6	3.6	3.5
	738	LNFF	A 11	9.9	0.9	9.8	9.0	6.6	0.9	7.8	6.9	5.2	0.9	7.3	7.0	5.2	0.9	7.1	6.7	5.0	1.1	6.5	5.7	4.3
	739	LNFF	A 12	13.9	0.7	9.6	8.8	7.5	0.7	7.9	7.4	6.3	1.0	7.9	7.2	6.2	0.7	7.8	7.2	6.2	0.7	7.8	7.2	6.2
	740	LNFF	A 13	8.5	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.5	5.0	0.4	8.7	8.4	5.0	0.4	8.7	8.4	5.0

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER.
FLATHEAD NATIONAL FOREST

ALTERNATIVE 8

					EARLY SPRING SEASON				LATE SPRING SEASON				SUMMER SEASON				FALL SEASON				HUNTING SEASON			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
HH	601	HGHS	A 1	27.0	0.0	10.0	10.0	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1	0.0	9.9	9.9	9.1
	602	HGHS	A 2	18.7	1.0	9.1	8.2	8.2	1.0	6.9	6.9	6.9	1.0	6.2	4.9	4.9	1.0	6.1	4.7	4.7	1.0	6.1	4.7	4.7
	603	HGHS	A 3	9.6	0.6	9.7	9.2	9.2	0.6	7.7	6.9	6.9	0.6	7.7	6.9	6.9	0.6	7.7	6.8	6.8	0.6	7.7	6.8	6.8
	604	HGHS	A 4	15.9	0.5	8.6	8.4	8.4	0.5	8.4	7.7	7.7	0.5	8.4	7.6	7.6	0.5	8.3	7.6	7.6	0.5	8.3	7.6	7.6
	605	HGHS	A 5	9.5	0.9	7.9	6.6	6.6	0.9	6.9	6.3	6.3	0.9	6.3	5.1	5.1	0.9	6.2	4.8	4.8	0.9	6.1	4.7	4.7
	606	HGHS	A 6	9.8	0.9	8.5	8.1	8.1	0.9	7.3	6.8	6.8	0.9	7.0	5.8	5.8	0.9	6.9	5.7	5.7	0.9	6.8	5.5	5.5
	607	HGHS	A 7	12.1	0.9	7.7	6.4	6.4	0.9	7.5	6.1	6.1	0.9	6.7	6.2	6.2	0.9	6.0	4.5	4.5	0.9	6.0	4.5	4.5
	608	SLVN	B 1	20.2	0.9	8.6	7.7	7.7	0.9	7.5	6.7	6.7	0.9	6.6	6.0	6.0	0.9	6.6	5.8	5.8	0.9	6.6	5.8	5.8
	609	SLVN	B 2	16.4	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.4	9.3	8.6	8.6	0.2	9.2	8.9	8.9	0.2	9.2	8.9	8.9
	610	SLVN	B 3	20.0	0.5	8.7	7.9	7.9	0.5	8.2	7.6	7.6	0.8	6.6	5.6	5.6	0.8	6.5	5.1	5.1	0.8	6.4	5.0	5.0
	611	HGHS	B 1	6.4	0.5	8.4	7.8	3.3	0.5	8.4	7.7	3.3	0.5	8.4	7.8	3.3	0.5	8.3	7.6	3.3	0.5	8.3	7.6	3.3
	612	HGHS	B 2	11.1	0.1	10.0	9.9	8.9	0.1	10.0	9.9	8.9	0.2	9.6	9.4	8.4	0.2	9.6	9.4	8.4	0.1	9.9	9.9	8.9
	613	HGHS	B 3	8.5	0.7	9.8	8.8	8.7	0.7	8.1	8.7	8.6	0.7	8.1	8.8	8.7	0.7	7.8	8.3	8.2	0.7	7.1	5.7	5.7
	614	HGHS	B 4	11.7	0.8	7.2	6.0	5.9	0.8	6.8	5.8	5.8	0.8	6.7	5.4	5.3	0.8	6.5	5.1	5.0	0.8	6.5	5.1	5.0
	615	HGHS	B 5	14.6	1.0	9.4	8.5	8.5	1.0	8.7	7.7	7.7	1.0	7.1	7.8	7.8	1.0	7.0	7.5	7.5	1.0	6.0	4.6	4.6
	616	HGHS	B 6	7.8	0.9	6.9	6.5	6.5	0.9	6.3	4.8	4.8	0.9	6.3	4.9	4.9	0.9	6.0	4.5	4.5	0.9	5.9	4.4	4.4
	617	HGHS	B 7	8.1	0.9	6.9	7.1	7.1	0.9	6.2	4.8	4.8	0.9	6.2	4.9	4.9	0.9	6.1	4.7	4.7	0.9	6.1	4.7	4.7
	618	HGHS	C 1	8.3	0.0	10.0	9.9	9.9	0.3	8.9	8.4	8.4	0.6	7.6	6.7	6.7	0.6	7.5	6.4	6.4	0.3	8.8	8.2	8.2
	619	HGHS	C 2	10.5	0.1	9.6	9.4	9.4	0.4	8.4	7.8	7.8	1.0	6.5	5.9	5.9	0.9	6.5	5.8	5.8	0.4	8.3	7.5	7.5
	620	HGHS	C 3	9.5	0.8	7.1	5.9	5.9	0.8	7.0	5.8	5.8	0.8	7.0	5.9	5.9	0.8	6.9	5.7	5.7	0.8	6.9	5.7	5.7
	621	HGHS	C 4	8.1	0.5	8.0	7.1	7.1	0.5	7.9	7.0	7.0	0.9	6.2	4.8	4.8	0.9	6.5	6.0	6.0	0.5	7.7	6.6	6.6
	622	HGHS	C 5	12.9	0.4	8.5	7.8	7.8	0.4	8.5	7.7	7.7	1.0	5.9	4.6	4.6	1.0	5.7	4.2	4.2	0.4	8.2	7.1	7.1
	623	SLVN	D 1	16.4	0.4	8.9	8.3	8.3	0.6	8.0	7.8	7.8	0.6	7.4	6.5	6.5	0.6	7.3	6.2	6.2	0.6	7.3	6.2	6.2
	624	LMFF	A 1	5.8	0.2	9.8	9.8	7.7	0.2	9.6	9.4	7.4	0.2	9.6	9.4	7.4	0.2	9.5	9.4	7.4	0.2	9.6	9.5	7.5
	625	LMFF	A 2	6.6	0.8	6.9	5.7	5.1	0.8	6.8	5.6	5.0	0.8	6.8	5.6	5.0	0.8	6.8	5.5	4.9	0.8	6.8	5.6	4.9
	626	LMFF	A 3	20.8	0.6	9.3	8.7	8.0	0.7	8.2	8.2	7.5	0.8	6.7	5.4	5.0	0.8	7.5	7.0	6.4	0.8	6.7	5.4	5.0
	627	LMFF	A 4	2.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	628	UMFF	A 1	9.2	1.0	6.5	5.1	4.5	1.0	6.3	4.8	4.3	1.0	6.3	4.8	4.3	1.0	6.3	5.0	4.4	1.0	6.3	5.0	4.4
	629	UMFF	A 2	9.8	0.2	9.3	8.9	8.9	0.8	9.1	8.1	8.1	0.8	7.6	8.1	8.1	0.8	7.6	7.9	7.9	0.8	7.3	7.0	7.0
	630	UMFF	A 3	17.5	0.0	10.0	9.9	9.9	0.6	9.7	9.2	9.2	0.6	7.9	7.7	7.7	0.6	7.8	7.5	7.5	0.6	7.8	7.5	7.5
	631	UMFF	A 4	16.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	9.9	9.9	9.9	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	632	UMFF	A 5	8.3	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SB	401	SLVN	C 1	22.0	0.4	10.0	9.7	9.7	0.4	8.7	8.1	8.1	0.4	8.6	8.1	8.1	0.4	8.6	7.9	7.9	0.4	8.6	7.9	7.9
	402	SLVN	C 2	21.2	0.4	10.0	9.7	9.7	0.4	9.0	9.1	9.1	0.4	8.6	8.0	8.0	0.4	8.4	7.7	7.7	0.4	8.4	7.7	7.7
	403	SLVN	C 3	19.5	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	10.0	9.9	9.9	0.0	9.9	9.7	9.7	0.0	9.9	9.7	9.7
	404	SLVN	C 4	10.2	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	405	SLVN	C 5	15.2	0.8	8.8	9.0	9.0	0.8	7.3	7.0	7.0	0.8	6.9	5.7	5.7	0.8	7.1	6.5	6.5	0.8	6.7	5.3	5.3
	406	SLVN	C 6	13.9	0.5	9.3	9.4	9.4	0.5	8.7	8.0	8.0	0.8	7.4	6.7	6.7	0.5	8.2	7.7	7.7	0.5	7.9	7.1	7.1

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER. FLATHEAD NATIONAL FOREST

ALTERNATIVE 8

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE	NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DEN- SITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SB	407	SLVN	D 2	10.8	0.0	10.0	9.9	9.9	1.0	8.2	6.8	6.8	1.0	6.0	4.7	4.7	1.0	6.6	6.6	6.6	1.0	6.0	4.6	4.6
	408	SLVN	D 3	10.0	0.0	10.0	10.0	10.0	0.7	7.3	6.3	6.3	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2	0.7	7.2	6.2	6.2
	409	BNKR	B 1	18.8	0.4	10.0	9.6	9.6	0.4	9.4	8.9	8.9	0.5	8.6	8.8	8.8	0.5	8.6	8.7	8.7	0.4	8.7	8.3	8.3
	410	BNKR	B 2	19.6	0.7	9.9	9.1	9.1	0.7	8.3	7.2	7.2	0.9	6.9	7.0	7.0	0.9	6.8	6.8	6.8	0.7	7.0	5.7	5.7
	411	BNKR	B 3	11.2	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	412	BNKR	B 4	16.5	0.0	10.0	10.0	10.0	0.0	10.0	9.9	9.9	0.0	10.0	10.0	10.0	0.0	9.9	9.8	9.8	0.0	9.9	9.8	9.8
	413	BNKR	B 5	21.7	0.2	10.0	9.8	9.8	0.2	9.3	8.9	8.9	0.2	9.1	8.7	8.7	0.2	9.0	8.6	8.6	0.2	9.0	8.6	8.6
	414	BNKR	B 6	16.1	0.0	9.9	9.9	9.9	0.1	9.7	9.6	9.6	0.1	9.7	9.6	9.6	0.1	9.7	9.4	9.4	0.1	9.7	9.4	9.4
	415	BNKR	B 7	16.4	0.2	9.6	9.3	9.3	0.8	7.2	6.5	6.5	0.8	6.8	5.6	5.6	0.8	6.7	5.3	5.3	0.8	6.7	5.3	5.3
	416	BNKR	B 8	16.0	0.0	10.0	10.0	10.0	0.2	9.2	8.8	8.8	0.6	7.8	7.0	7.0	0.2	9.1	8.6	8.6	0.2	9.1	8.6	8.6
	417	BNKR	B 9	25.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.1	9.7	9.6	9.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	418	BNKR	B 10	3.5	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
SL	102	HGHS	A 9	17.9	0.6	8.3	9.0	7.9	0.6	7.7	7.1	6.2	0.8	6.9	6.1	5.4	0.8	6.9	6.0	5.3	0.8	6.7	5.4	4.8
	104	SLVN	A 2	17.2	0.4	8.9	9.4	7.9	0.4	8.4	7.8	6.5	0.4	8.4	7.8	6.6	0.4	8.4	7.7	6.5	0.4	8.4	7.7	6.5
	107	SLVN	A 5	9.0	0.0	10.0	9.9	7.0	0.0	10.0	9.9	7.0	0.1	9.6	9.7	6.9	0.1	9.5	9.6	6.8	0.1	9.5	9.6	6.8
	109	SLVN	A 7	11.1	0.2	10.0	9.5	6.1	0.2	9.9	9.4	6.1	0.2	9.9	9.5	6.1	0.2	9.8	9.5	6.1	0.2	9.8	9.5	6.1
	110	BNKR	A 7	12.9	0.8	7.0	5.7	5.7	0.8	6.8	5.1	5.1	0.8	6.8	5.2	5.2	0.8	6.6	5.2	5.2	0.8	6.6	5.2	5.2
	111	SLVN	A 9	12.6	0.6	10.0	9.5	8.8	0.6	9.9	9.1	8.4	0.6	8.9	9.2	8.5	0.6	8.8	9.1	8.4	0.6	8.3	7.6	7.0
	112	SLVN	A 10	10.7	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	113	SLVN	A 11	15.3	0.3	10.0	9.8	9.8	0.3	9.9	9.5	9.5	0.3	8.9	8.5	8.5	0.3	8.9	8.4	8.4	0.3	8.9	8.4	8.4
	114	SLVN	A 12	6.1	0.8	8.7	9.0	5.5	0.8	8.2	7.4	4.6	0.8	8.0	7.5	4.7	0.8	7.8	7.2	4.5	0.8	7.7	7.2	4.5
	115	NMSR	A 1	10.6	1.0	9.4	9.0	7.4	1.0	7.4	6.0	5.0	1.0	6.8	5.9	4.9	1.0	6.7	5.8	4.8	1.0	6.4	5.8	4.8
	116	NMSR	A 2	20.9	1.0	10.0	9.2	9.2	1.0	8.3	7.0	7.0	1.0	7.9	6.9	6.9	1.0	7.6	6.4	6.4	1.0	6.7	6.4	6.4
	117	NMSR	A 3	10.4	1.0	9.7	9.0	8.7	1.0	6.7	6.5	6.3	1.0	6.0	4.7	4.5	1.0	5.7	4.1	4.0	1.0	5.6	4.1	4.0
	118	NMSR	A 4	10.4	0.9	10.0	9.1	8.6	0.9	7.7	8.1	7.7	0.9	6.9	5.5	5.2	0.9	6.5	4.7	4.5	0.9	6.0	4.7	4.5
	119	NMSR	A 5	10.9	1.0	7.6	8.6	8.6	1.0	6.6	5.1	5.1	1.0	6.6	5.1	5.1	1.0	6.3	4.8	4.8	1.0	6.1	4.8	4.8
	120	NMSR	A 6	11.3	0.9	9.7	8.8	8.4	0.9	9.3	7.8	7.5	0.9	8.3	7.7	7.4	0.9	8.0	7.5	7.1	0.9	7.1	6.0	5.7
	121	NMSR	A 7	16.4	0.9	9.8	8.3	8.3	0.9	9.8	8.3	8.3	0.9	9.8	8.3	8.3	0.9	9.4	8.2	8.2	0.9	9.4	8.2	8.2
	122	NMSR	A 8	17.9	1.0	9.6	8.3	7.9	1.0	9.6	8.3	7.8	1.0	9.6	8.3	7.8	1.0	9.3	8.3	7.8	1.0	9.2	8.0	7.6
	123	BNKR	A 1	15.4	0.4	9.1	9.3	9.3	0.4	8.7	8.0	8.0	0.4	8.7	8.0	8.0	0.4	8.6	8.0	8.0	0.4	8.6	8.0	8.0
	124	BNKR	A 2	14.0	0.5	10.0	9.5	9.5	0.5	9.1	8.4	8.4	0.5	8.9	8.2	8.2	0.5	8.8	8.2	8.2	0.5	8.8	8.2	8.2
	125	BNKR	A 3	15.4	1.0	7.4	5.9	5.7	1.0	7.0	5.2	5.0	1.0	6.7	5.1	5.0	1.0	6.5	5.0	4.8	1.0	6.4	5.0	4.8
	126	BNKR	A 4	35.9	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	127	BNKR	A 5	11.3	0.8	10.0	9.3	9.3	0.8	10.0	9.3	9.3	0.8	8.5	8.9	8.9	0.8	8.3	8.8	8.8	0.8	8.3	8.8	8.8
	128	BNKR	A 6	9.4	0.0	9.9	9.8	9.8	0.0	9.8	9.6	9.6	0.0	9.8	9.6	9.6	0.0	9.7	9.6	9.6	0.0	9.7	9.6	9.6
	129	BNKR	A 8	8.9	1.0	7.0	7.1	6.7	1.0	6.1	4.3	4.1	1.0	6.1	4.3	4.1	1.0	6.0	4.3	4.1	1.0	6.0	4.3	4.1
	130	BNKR	A 9	10.3	0.9	8.6	8.0	7.5	0.9	7.9	7.7	7.2	0.9	7.9	7.7	7.3	0.9	7.7	7.5	7.1	0.9	7.0	5.8	5.5
	131	SMSR	A 1	9.5	0.5	9.9	9.6	9.6	0.5	8.6	8.0	8.0	0.7	7.5	6.5	6.5	0.7	7.4	6.4	6.4	0.7	7.4	6.3	6.3
	132	SMSR	A 2	8.1	0.7	8.2	8.8	8.8	0.7	8.2	8.8	8.8	0.9	7.2	7.5	7.5	0.9	6.6	5.7	5.7	0.9	6.3	4.9	4.9

TABLE G. SQUARE MILES OF NATIONAL FOREST AND CORPORATE LAND, OPEN ROAD DENSITY, AND RESIDUAL IMPACT VALUE OF ROADS, HIGHWAYS, AND PRIVATE LAND ON ELK AND GRIZZLY BEAR HABITAT BY RANGER DISTRICT, SEASON OF USE, AND AREA NUMBER. FLATHEAD NATIONAL FOREST

ALTERNATIVE 8

					*EARLY SPRING SEASON *				* LATE SPRING SEASON *				* SUMMER SEASON *				* FALL SEASON *				* HUNTING SEASON *			
RD	NO	BMA	CODE		NF & CORP SQ MI OF LAND	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)	HWY+ NF & CORP OPEN ROAD DENSITY	RESID IMPCT OF ROADS +HWY (ELK)	RESID IMPCT OF ROADS +HWY (GRZ)	RESID IMPCT OF ROADS +HWY +PVT LAND (GRZ)
SL	133	SMSR	A	3	8.8	0.9	7.8	7.3	6.3	0.9	7.7	7.2	6.2	0.9	7.7	7.1	6.1	0.9	7.6	7.0	6.0	0.9	7.3	5.9	5.1
	134	SMSR	A	4	8.6	0.9	9.2	8.4	8.4	0.9	8.5	8.1	8.1	0.9	8.1	7.2	7.2	0.9	7.4	5.9	5.9	0.9	6.9	5.9	5.9
	135	SMSR	A	5	9.5	1.0	10.0	8.2	8.2	1.0	7.4	6.8	6.8	1.0	6.7	4.8	4.8	1.0	6.3	4.7	4.7	1.0	6.4	4.7	4.7
	136	SMSR	A	6	11.4	1.0	8.1	6.8	5.7	1.0	6.4	4.8	4.2	1.0	6.4	4.8	4.2	1.0	6.1	4.7	4.1	1.0	6.2	4.7	4.1
	137	SMSR	B	1	11.2	0.9	10.0	8.9	8.9	0.9	9.2	8.7	8.7	0.9	8.6	8.7	8.7	0.9	8.4	8.7	8.7	0.9	8.6	7.8	7.8
	138	SMSR	B	2	11.0	1.0	9.9	8.4	6.2	1.0	8.8	8.2	6.1	1.0	8.8	8.3	6.1	1.0	8.5	8.2	6.0	1.0	9.2	8.2	6.0
	139	SMSR	B	3	11.1	0.7	10.0	9.2	7.1	0.7	8.5	7.6	5.9	0.7	8.5	7.6	5.9	0.7	8.3	7.4	5.7	0.7	8.2	7.4	5.7
	140	SMSR	B	4	18.7	0.7	10.0	9.2	9.1	0.7	8.7	7.6	7.6	0.7	8.6	7.4	7.4	0.7	8.3	7.2	7.1	0.7	7.0	5.9	5.8
	141	SMSR	B	5	12.7	0.6	10.0	9.4	9.1	0.6	8.7	7.7	7.5	0.6	7.9	7.8	7.6	0.6	7.8	7.6	7.3	0.6	7.4	6.3	6.1
	142	SMSR	B	6	8.5	0.7	10.0	9.4	6.7	0.7	8.2	7.2	5.2	0.7	8.2	7.2	5.2	0.7	8.0	6.9	5.1	0.7	7.6	6.5	4.8
	143	BGSM	A	1	33.6	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0	0.0	10.0	10.0	10.0
	144	BGSM	A	2	7.7	0.9	7.8	6.9	6.9	0.9	7.8	6.8	6.8	0.9	7.8	6.9	6.9	0.9	7.5	6.7	6.7	0.9	7.3	5.8	5.8
	145	BGSM	A	3	6.1	0.8	8.3	8.3	6.3	0.8	8.3	8.2	6.2	0.8	8.3	8.3	6.3	0.8	8.0	8.0	6.1	0.8	6.5	4.9	3.8
	146	BGSM	A	4	8.7	0.9	7.9	7.0	7.0	0.9	7.9	6.9	6.9	0.9	7.9	7.0	7.0	0.9	7.6	6.7	6.7	0.9	6.8	5.9	5.9
	147	BGSM	A	5	8.4	0.7	8.7	8.2	6.1	0.7	8.6	8.1	6.1	0.7	8.6	8.3	6.2	0.7	8.3	8.0	6.0	0.7	7.9	6.7	5.1
	148	BGSM	A	6	5.2	0.4	9.0	8.5	5.2	0.4	8.9	8.4	5.2	0.4	8.9	8.5	5.3	0.4	8.7	8.5	5.3	0.4	8.5	7.7	4.8
	149	BGSM	A	7	11.8	1.0	7.3	8.3	6.7	1.0	7.2	8.2	6.7	1.0	7.2	8.3	6.7	1.0	7.1	8.0	6.5	1.0	6.1	4.8	4.0
	150	BGSM	A	8	16.8	0.5	8.7	8.8	7.6	0.5	8.7	8.7	7.5	0.5	8.7	8.8	7.6	0.5	8.5	8.4	7.3	0.5	8.1	7.1	6.2
TL	828	WHIT	F	SH	11.1	0.2	10.0	9.8	9.8	0.2	9.9	9.6	9.6	0.2	9.4	9.6	9.6	0.2	9.3	9.6	9.6	0.2	9.1	8.7	8.7
	829	BIG	O	NT	15.2	0.5	10.0	9.6	9.1	0.5	9.9	9.3	8.8	0.5	9.8	9.2	8.7	0.5	8.6	9.2	8.7	0.5	8.0	7.3	6.9

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

GLACIER VIEW RANGER DISTRICT
ALTERNATIVE 1

6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	B M U	B M S	B M A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
1 TRCR	701	UNFF	A	1	3.3	8,549	13.4	0	0	8,549
	702	UNFF	A	2	0.6	9,592	15.0	652	2,738	12,982
	703	UNFF	A	3	5.8	16,557	25.9	0	0	16,557
	704	UNFF	A	4	6.4	15,589	24.4	0	0	15,589
	705	UNFF	A	5	3.9	6,521	10.2	416	1,594	8,530
	708	UNFF	B	3	3.0	12,593	19.7	0	0	12,593
	709	UNFF	B	4	0.2	12,255	19.1	1	0	12,256
	GEO UNIT TOTAL				23.1	81,654	127.6	1,069	4,332	87,055
	GEO UNIT OPEN ROAD DENSITY					23.1/127.6 = 0.2				
2 WHCL	706	UNFF	B	1	6.2	5,757	9.0	8	0	5,765
	710	UNFF	B	5	5.4	8,951	14.0	0	0	8,951
	712	UNFF	B	7	0.9	7,507	11.7	0	0	7,507
	713	UNFF	B	8	5.6	7,738	12.1	0	0	7,738
	714	UNFF	B	9	3.4	6,928	10.8	0	0	6,928
	716	UNFF	C	1	2.4	10,509	16.4	0	0	10,509
	717	UNFF	C	2	4.0	5,818	9.1	0	0	5,818
	718	UNFF	C	3	5.8	4,976	7.8	0	0	4,976
	722	UNFF	C	7	8.6	7,950	12.4	1	0	7,951
	723	UNFF	C	8	14.0	5,778	9.0	0	0	5,778
	724	UNFF	C	9	0.0	10,192	15.9	418	0	10,610
	GEO UNIT TOTAL				56.4	82,103	128.3	427	0	82,530
	GEO UNIT OPEN ROAD DENSITY					56.4/128.3 = 0.4				
3 NFVY	707	UNFF	B	2	6.5	4,415	6.9	345	1,642	6,401
	711	UNFF	B	6	13.1	7,863	12.3	641	901	9,405
	715	UNFF	B	10	15.0	8,538	13.3	358	2,588	11,483
	719	UNFF	C	4	8.3	3,917	6.1	469	3,990	8,376
	720	UNFF	C	5	2.5	4,078	6.4	4,365	129	8,572
	721	UNFF	C	6	2.5	2,361	3.7	4,145	2,671	9,177
	725	UNFF	C	10	0.0	1,087	1.7	5,162	0	6,249
	GEO UNIT TOTAL				47.8	32,258	50.4	15,484	11,921	59,664
	GEO UNIT OPEN ROAD DENSITY					47.8 /50.4 = 0.9				
5 BGCR	726	UNFF	C	11	7.8	5,925	9.3	483	0	6,408
	727	UNFF	C	12	1.8	4,792	7.5	1,128	31	5,950
	728	LNFF	A	1	2.2	8,021	12.5	80	500	8,601
	729	LNFF	A	2	6.2	10,478	16.4	282	0	10,760
	730	LNFF	A	3	14.5	7,192	11.2	116	0	7,308
	731	LNFF	A	4	17.1	9,253	14.5	0	1,297	10,550

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

GLACIER VIEW RANGER DISTRICT
ALTERNATIVE 1

6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	BMU	BMS	BMA	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
5 BGCR	732	LNFF	A	5	0.0	6,350	9.9	0	0	6,350
	733	LNFF	A	6	18.3	8,092	12.6	0	0	8,092
	734	LNFF	A	7	17.4	7,007	10.9	0	0	7,007
	GEO UNIT TOTAL				85.4	67,110	104.9	2,089	1,827	71,027
	GEO UNIT OPEN ROAD DENSITY					85.4/104.9 = 0.8				
6 CNTK	735	LNFF	A	8	7.9	7,241	11.3	0	1,749	8,990
	736	LNFF	A	9	7.2	6,130	9.6	0	150	6,280
	737	LNFF	A	10	34.3	12,113	18.9	0	274	12,387
	738	LNFF	A	11	19.2	6,334	9.9	0	2,807	9,141
	739	LNFF	A	12	15.6	6,285	9.8	2,634	1,898	10,817
	740	LNFF	A	13	3.0	4,943	7.7	465	5,070	10,478
	GEO UNIT TOTAL				87.1	43,045	67.3	3,099	11,949	58,093
	GEO UNIT OPEN ROAD DENSITY					87.1/67.3 = 1.3				
	DISTRICT TOTAL				299.7	306,172	478.4	22,167	30,029	358,368
	DISTRICT OPEN ROAD DENSITY					299.7/478.4 = 0.6				

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

HUNGRY HORSE RANGER DISTRICT
ALTERNATIVE 1

6/12/90

GEO- GRAPHIC UNIT	DIST & AREA NO.	B M U	B M S	B M A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
1 CLMT	601	HGHS	A	1	1.1	17,290	27.0	0	1,768	19,058
	GEO UNIT TOTAL				1.1	17,290	27.0	0	1,768	19,058
	GEO UNIT OPEN ROAD DENSITY					1.1/27.0 =0.04				
2 WTSD	602	HGHS	A	2	20.6	11,999	18.7	0	0	11,999
	603	HGHS	A	3	5.4	6,117	9.6	0	0	6,117
	604	HGHS	A	4	11.1	10,204	15.9	0	0	10,204
	605	HGHS	A	5	20.0	6,055	9.5	0	0	6,055
	606	HGHS	A	6	16.8	6,244	9.8	0	0	6,244
	607	HGHS	A	7	29.0	7,754	12.1	0	0	7,754
	608	SLVN	B	1	25.8	12,910	20.2	0	0	12,910
	609	SLVN	B	2	2.7	10,476	16.4	0	0	10,476
	610	SLVN	B	3	29.9	12,773	20.0	0	0	12,773
	GEO UNIT TOTAL				161.3	84,533	132.1	0	0	84,533
	GEO UNIT OPEN ROAD DENSITY					161.3/132.1 = 1.2				
3 LFDM	611	HGHS	B	1	5.4	4,119	6.4	0	8,886	13,004
	612	HGHS	B	2	2.4	7,096	11.1	0	929	8,024
	613	HGHS	B	3	6.6	5,453	8.5	0	77	5,530
	614	HGHS	B	4	13.7	7,501	11.7	0	127	7,627
	GEO UNIT TOTAL				28.1	24,168	37.8	0	10,017	34,186
	GEO UNIT OPEN ROAD DENSITY					28.1/37.8 = 0.7				
4 EMCR	615	HGHS	B	5	22.0	9,356	14.6	0	0	9,356
	616	HGHS	B	6	16.7	5,009	7.8	0	0	5,009
	617	HGHS	B	7	12.0	5,181	8.1	0	0	5,181
	618	HGHS	C	1	4.9	5,284	8.3	0	0	5,284
	619	HGHS	C	2	15.7	6,730	10.5	0	0	6,730
	GEO UNIT TOTAL				71.3	31,559	49.3	0	0	31,559
	GEO UNIT OPEN ROAD DENSITY					71.3/49.3 = 1.4				
5 ETSD	620	HGHS	C	3	9.8	6,057	9.5	0	0	6,057
	621	HGHS	C	4	5.5	5,183	8.1	0	0	5,183
	622	HGHS	C	5	36.7	8,236	12.9	0	0	8,236
	623	SLVN	D	1	20.7	10,465	16.4	0	0	10,465

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

HUNGRY HORSE RANGER DISTRICT
ALTERNATIVE 1 6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	B M U	B M S	B M A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
	GEO UNIT TOTAL				72.7	29,941	46.8	0	0	29,941
	GEO UNIT OPEN ROAD DENSITY					72.7/46.8 = 1.6				
6 MDFK	624	LMFF	A	1	1.1	3,729	5.8	0	1,194	4,923
	625	LMFF	A	2	0.6	4,219	6.6	0	730	4,948
	626	LMFF	A	3	13.3	13,324	20.8	0	1,431	14,755
	627	LMFF	A	4	0.0	1,737	2.7	0	2	1,739
	GEO UNIT TOTAL				15.0	23,009	36.0	0	3,356	26,365
	GEO UNIT OPEN ROAD DENSITY					15.0/36.0 = 0.4				
7 BCCC	628	UMFF	A	1	1.2	5,875	9.2	0	1,052	6,927
	629	UMFF	A	2	5.7	6,300	9.8	0	0	6,300
	630	UMFF	A	3	12.9	11,221	17.5	0	0	11,221
	631	UMFF	A	4	0.5	10,349	16.2	0	0	10,348
	632	UMFF	A	5	0.0	5,304	8.3	0	0	5,304
	GEO UNIT TOTAL				20.2	39,049	61.0	0	1,052	40,101
	GEO UNIT OPEN ROAD DENSITY					20.2/61.0 = 0.3				
	DISTRICT TOTAL				369.8	249,549	389.9	0	16,194	265,743
	DISTRICT OPEN ROAD DENSITY					369.8/389.9 = 0.9				

TABLE G1

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT 1

SPOTTED BEAR RANGER DISTRICT
ALTERNATIVE 1

6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	B M U	B M S	B M A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
1 SUCR	401	SLVN	C	1	9.0	14,105	22.0	0	0	14,105
	402	SLVN	C	2	9.2	13,575	21.2	0	0	13,575
	403	SLVN	C	3	0.8	12,458	19.5	0	0	12,458
	404	SLVN	C	4	0.0	6,537	10.2	0	0	6,537
	GEO UNIT TOTAL				19.0	46,676	72.9	0	0	46,676
	GEO UNIT OPEN ROAD DENSITY					19.0/72.9 =0.3				
2 STFK	405	SLVN	C	5	24.2	9,748	15.2	0	0	9,748
	406	SLVN	C	6	12.7	8,922	13.9	0	0	8,922
	407	SLVN	D	2	13.4	6,891	10.8	0	0	6,891
	408	SLVN	D	3	6.9	6,418	10.0	0	0	6,418
	409	BNKR	B	1	10.8	12,036	18.8	0	0	12,036
	410	BNKR	B	2	18.9	12,543	19.6	0	0	12,543
	414	BNKR	B	6	0.9	10,306	16.1	0	0	10,306
	GEO UNIT TOTAL				88.0	66,864	104.5	0	0	66,864
	GEO UNIT OPEN ROAD DENSITY					88.0/104.5 = 0.8				
3 BNKR	411	BNKR	B	3	0.0	7,163	11.2	0	0	7,163
	412	BNKR	B	4	0.0	10,538	16.5	0	0	10,538
	413	BNKR	B	5	5.0	13,856	21.7	0	0	13,856
	GEO UNIT TOTAL				5.0	31,558	49.3	0	0	31,558
	GEO UNIT OPEN ROAD DENSITY					5.0/49.3 = 0.1				
4 SPBR	415	BNKR	B	7	13.9	10,501	16.4	0	0	10,501
	416	BNKR	B	8	10.2	10,216	16.0	0	0	10,216
	417	BNKR	B	9	1.6	16,399	25.6	0	0	16,399
	418	BNKR	B	10	0.0	2,236	3.5	0	0	2,236
	GEO UNIT TOTAL				25.7	39,352	61.5	0	0	39,352
	GEO UNIT OPEN ROAD DENSITY					25.7/61.5 = 0.4				
	DISTRICT TOTAL				137.8	184,450	288.2	0	0	184,450
	DISTRICT OPEN ROAD DENSITY					137.8/288.2 = 0.5				

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

SWAN LAKE RANGER DISTRICT, SWAN UNIT
ALTERNATIVE 1

6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	B M U	B M S	B M A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
1 NSFA	102	HGHS	A	9	14.0	10,777	16.8	665	1,998	13,440
	104	SLVN	A	2	4.5	7,514	11.7	3,486	2,502	13,502
	107	SLVN	A	5	1.2	4,906	7.7	861	2,867	8,635
	GEO UNIT TOTAL				19.7	23,197	36.2	5,013	7,367	35,576
	GEO UNIT OPEN ROAD DENSITY					19.7/36.2 = 0.5				
2 ETSH	115	NMSR	A	1	12.6	5,392	8.4	1,378	1,818	8,588
	116	NMSR	A	2	30.8	13,403	20.9	0	11	13,413
	GEO UNIT TOTAL				43.4	18,795	29.4	1,378	1,829	22,002
	GEO UNIT OPEN ROAD DENSITY					43.4/29.4 = 1.5				
3 LRSW	109	SLVN	A	7	0.0	4,468	7.0	2,662	4,870	12,000
	110	BNKR	A	7	1.1	643	1.0	7,620	8	8,272
	111	SLVN	A	9	5.9	7,469	11.7	620	783	8,872
	112	SLVN	A	10	0.0	6,822	10.7	0	15	6,837
	113	SLVN	A	11	9.8	9,791	15.3	0	0	9,791
	114	SLVN	A	12	9.7	3,928	6.1	0	3,247	7,175
	117	NMSR	A	3	38.5	6,111	9.5	517	229	6,856
	118	NMSR	A	4	42.7	6,667	10.4	0	453	7,121
	119	NMSR	A	5	21.2	6,874	10.7	111	0	6,985
	120	NMSR	A	6	13.5	3,875	6.1	3,349	384	7,609
	121	NMSR	A	7	0.0	2,652	4.1	7,838	0	10,491
	122	NMSR	A	8	1.1	1,824	2.9	9,660	835	12,319
	123	BNKR	A	1	2.2	5,658	8.8	4,175	0	9,833
	124	BNKR	A	2	0.5	2,213	3.5	6,728	0	8,941
	125	BNKR	A	3	7.1	2,884	4.5	6,940	451	10,275
	126	BNKR	A	4	0.0	22,998	35.9	3	0	23,001
	127	BNKR	A	5	5.6	4,552	7.1	2,663	0	7,214
	128	BNKR	A	6	0.0	1,526	2.4	4,473	0	5,999
	129	BNKR	A	8	0.1	258	0.4	5,437	381	6,075
	GEO UNIT TOTAL				159.0	101,213	158.1	62,795	11,656	175,664
	GEO UNIT OPEN ROAD DENSITY					159.0/158.1 = 1.0				
4 UPSW	130	BNKR	A	9	5.7	2,914	4.6	3,690	480	7,084
	131	SMSR	A	1	4.7	2,701	4.2	3,384	0	6,085
	132	SMSR	A	2	3.4	2,657	4.2	2,556	0	5,213
	133	SMSR	A	3	5.3	2,486	3.9	3,123	1,121	6,730
	134	SMSR	A	4	2.9	2,028	3.2	3,486	0	5,514
	135	SMSR	A	5	3.8	1,726	2.7	4,350	0	6,076
	136	SMSR	A	6	8.6	2,618	4.1	4,690	1,649	8,956

TABLE G1.

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

SWAN LAKE RANGER DISTRICT, SWAN UNIT
ALTERNATIVE 1

6/12/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	BMU	BMS	BMA	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
4 UPSW	137	SMSR	B	1	5.7	3,200	5.0	3,948	0	7,147
	138	SMSR	B	2	3.4	2,320	3.6	4,717	3,166	10,203
	139	SMSR	B	3	4.8	2,818	4.4	4,254	2,604	9,676
	140	SMSR	B	4	8.4	8,089	12.6	3,878	52	12,020
	141	SMSR	B	5	4.1	4,815	7.5	3,329	284	8,428
	142	SMSR	B	6	4.7	2,796	4.4	2,621	2,653	8,069
	143	BGSM	A	1	0.0	21,534	33.6	1	0	21,534
	144	BGSM	A	2	2.2	2,377	3.7	2,522	0	4,898
	145	BGSM	A	3	4.6	2,005	3.1	1,918	1,599	5,522
	146	BGSM	A	4	4.1	2,956	4.6	2,588	1	5,545
	147	BGSM	A	5	4.1	2,505	3.9	2,892	2,333	7,730
	148	BGSM	A	6	0.8	1,363	2.1	1,995	2,695	6,054
	149	BGSM	A	7	10.1	5,325	8.3	2,202	2,169	9,696
	150	BGSM	A	8	12.0	8,328	13.0	2,447	1,957	12,732
	GEO UNIT TOTAL				103.4	87,556	136.8	64,590	22,764	174,910
	GEO UNIT OPEN ROAD DENSITY					103.4/136.8 = 0.8				
	DISTRICT TOTAL				325.6	230,761	360.6	133,776	43,616	408,152
	DISTRICT OPEN ROAD DENSITY					325.6/360.6 = 0.9				

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

TALLY LAKE RANGER DISTRICT
ALTERNATIVE 1

6/20/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	R D A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL 8MA ACRES
02 UPWF	828	TALLY 28	2.6	7,117	11.1	0	0	7,117
		GEO UNIT TOTAL	2.6	7,117	11.1	0	0	7,117
	GEO UNIT OPEN ROAD DENSITY			2.6/11.1 = 0.2				
03 WHFS	829	TALLY 29	7.5	9,637	15.1	92	631	10,360
		GEO UNIT TOTAL	7.5	9,637	15.1	92	631	10,360
	GEO UNIT OPEN ROAD DENSITY			7.5/15.1 = 0.5				
04 OMCR	802	TALLY 2	1.7	3,542	5.5	0	326	3,868
	803	TALLY 3	22.6	9,449	14.8	0	1,210	10,659
	804	TALLY 4	38.1	7,821	12.2	0	0	7,821
	805	TALLY 5	27.7	8,212	12.8	0	793	9,005
		GEO UNIT TOTAL	90.0	29,024	45.4	0	2,329	31,353
	GEO UNIT OPEN ROAD DENSITY			90.0/45.4 = 2.0				
05 UGCR	806	TALLY 6	50.2	13,428	21.0	0	293	13,721
	807	TALLY 7	26.6	6,366	9.9	0	138	6,503
	808	TALLY 8	15.9	9,284	14.5	0	463	9,747
	809	TALLY 9	24.6	8,779	13.7	0	530	9,309
	811	TALLY 11	15.5	6,551	10.2	0	222	6,773
		GEO UNIT TOTAL	132.8	44,408	69.4	0	1,646	46,054
	GEO UNIT OPEN ROAD DENSITY			132.8/69.4 = 1.9				
06 TLRM	810	TALLY 10	16.4	6,457	10.1	0	953	7,410
	813	TALLY 13	13.4	5,136	8.0	0	2,363	7,499
		GEO UNIT TOTAL	29.8	11,593	18.1	0	3,316	14,909
	GEO UNIT OPEN ROAD DENSITY			29.8/18.1 = 1.6				
07 STMD	812	TALLY 12	21.9	7,572	11.8	0	461	8,034
	814	TALLY 14	65.4	12,424	19.4	0	1,257	13,681
	815	TALLY 15	41.2	11,263	17.6	317	589	12,168
	816	TALLY 16	37.6	8,858	13.8	473	1,278	10,609
	817	TALLY 17	49.5	8,519	13.3	893	607	10,019
	822	TALLY 22	52.1	14,389	22.5	34	1,182	15,606
	825	TALLY 25	45.8	9,400	14.7	2,818	424	12,642

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE,
AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES,
BY GEOGRAPHIC UNIT AND DISTRICT

TALLY LAKE RANGER DISTRICT
ALTERNATIVE 1

6/20/90

GEO-GRAPHIC UNIT	DIST & AREA NO.	R D A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
		GEO UNIT TOTAL	313.5	72,425	113.2	4,536	5,799	82,759
		GEO UNIT OPEN ROAD DENSITY		313./ 113.2 = 2.8				
08 MMRD	818	TALLY 18	7.4	6,512	10.2	0	40	6,552
	819	TALLY 19	21.3	9,566	14.9	72	4,046	13,683
	820	TALLY 20	23.8	6,529	10.2	6	218	6,753
		GEO UNIT TOTAL	52.4	22,607	35.3	78	4,303	26,988
		GEO UNIT OPEN ROAD DENSITY		52.4/35.3 = 1.5				
09 UPGR	823	TALLY 23	40.7	14,016	21.9	1,291	11	15,317
	824	TALLY 24	14.2	4,484	7.0	5,578	709	10,770
	826	TALLY 26	17.4	7,312	11.4	630	204	8,145
		GEO UNIT TOTAL	72.3	25,812	40.3	7,498	923	34,233
		GEO UNIT OPEN ROAD DENSITY		72.3/40.3 = 1.8				
10 ASLK	827	TALLY 27	10.4	9,267	14.5	20,303	16,379	45,949
		GEO UNIT TOTAL	10.4	9,267	14.5	20,303	16,379	45,949
		GEO UNIT OPEN ROAD DENSITY		10.4/14.5 0.7				
		DISTRICT TOTAL	711.3	231,890	362.3	32,506	35,325	299,721
		DISTRICT OPEN ROAD DENSITY		711.3/362.3 = 2.0				

FOREST SERVICE OPEN ROAD MILES AND LAND AREA; CORPORATE, SMALL PRIVATE, AND TOTAL ACRES; TOTAL ROAD MILES OPEN; TOTAL ACRES; AND TOTAL SQUARE MILES, BY GEOGRAPHIC UNIT AND DISTRICT

SWAN LAKE RANGER DISTRICT, ISLAND UNIT
ALTERNATIVE 1

6/20/90

GEO- GRAPHIC UNIT	DIST & AREA NO.	R D A	FS ROAD MILES OPEN	FS ACRES	FS SQMI	CORP ACRES	SMALL PRVT ACRES	TOTAL BMA ACRES
ISLAND	01	HASKILL 1	25.5	8,590	13.4	1,172	788	10,549
	02	HASKILL 2	0.0	73	0.1	12,068	3,330	15,471
	03	BK-STNR 1	30.0	7,260	11.3	863	1,631	9,754
	04	BK-STNR 2	35.1	8,016	12.5	521	284	8,821
	05	BK-STNR 3	0.0	20	0.0	7,373	1,415	8,808
	06	MNT EMS 1	44.8	9,974	15.6	19	527	10,519
	07	MNT ENS 2	38.2	8,453	13.2	1,108	982	10,542
	08	HOGTAIL	36.6	6,318	9.9	1,661	0	7,978
		GEO UNIT TOTAL	210.2	48,702	76.1	24,784	8,957	82,443
		GEO UNIT OPEN ROAD DENSITY		210.2/76.1 = 2.8				
		DISTRICT TOTAL	210.2	48,702	76.1	24,784	8,957	82,443
		DISTRICT OPEN ROAD DENSITY		210.2/76.1 = 2.8				

APPENDIX H

MISCELLANEOUS WILDLIFE RELATED MATERIAL

Wildlife Residual Impact Value Calculation Notes H - 1

Grizzly Bear Cumulative Effect Model Values H - 2

Grizzly Bear "Weighted" Road Impact Curve, Motorized H - 3

Grizzly Bear High Use Trail Impact Curve, Non-Motorized H - 4

Elk Spring, Summer, Fall Range Map H - 5

Elk "Weighted" Road Impact Curve, Motorized H - 6

1985 U.S. Fish and Wildlife Service Biological Opinion to LRMP H - 7

1989 U.S. Fish and Wildlife Service Amended Biological Opinion to LRMP H - 18

Biological Assessment for Federally-Listed Endangered, Threatened, and Proposed Wildlife Species H - 90

WILDLIFE RESIDUAL IMPACT VALUE CALCULATION NOTES

"Weighted" miles were calculated by using use level coefficients for elk or grizzly bear. These coefficients were applied by use level, depending on whether a road was open or closed and season. Coefficients use the midpoint for cover/non-cover coefficients for both elk and grizzly bear included in "Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho" (Leege, 1984), and "Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem" (1987). The following use levels and coefficients were used:

MOTORIZED USE OF ROADS			
Vehicles/Week	Use Level	Elk Coefficient	Grizzly Bear Coefficient
≤ 1	1	*0.00	0.15
2 - 5	2	*0.05	0.30
6 - 20	3	0.70	0.30
≥ 21	4, 5, 6	1.00	1.10

* Denotes coefficient = 0.10 during fall and hunting seasons, as shown other times.

Closed roads were assumed to have affects upon grizzly bear during early and late spring and to grizzly bear and elk during fall and hunting seaon. The coefficient used was 0.05 for grizzly bear and 0.1 for elk.

"Road effects" is computed for elk using "Weighted Road Model Curve", figure H-5, (Lyons, 1983) as displayed in the North Idaho model (Leege, 1984).

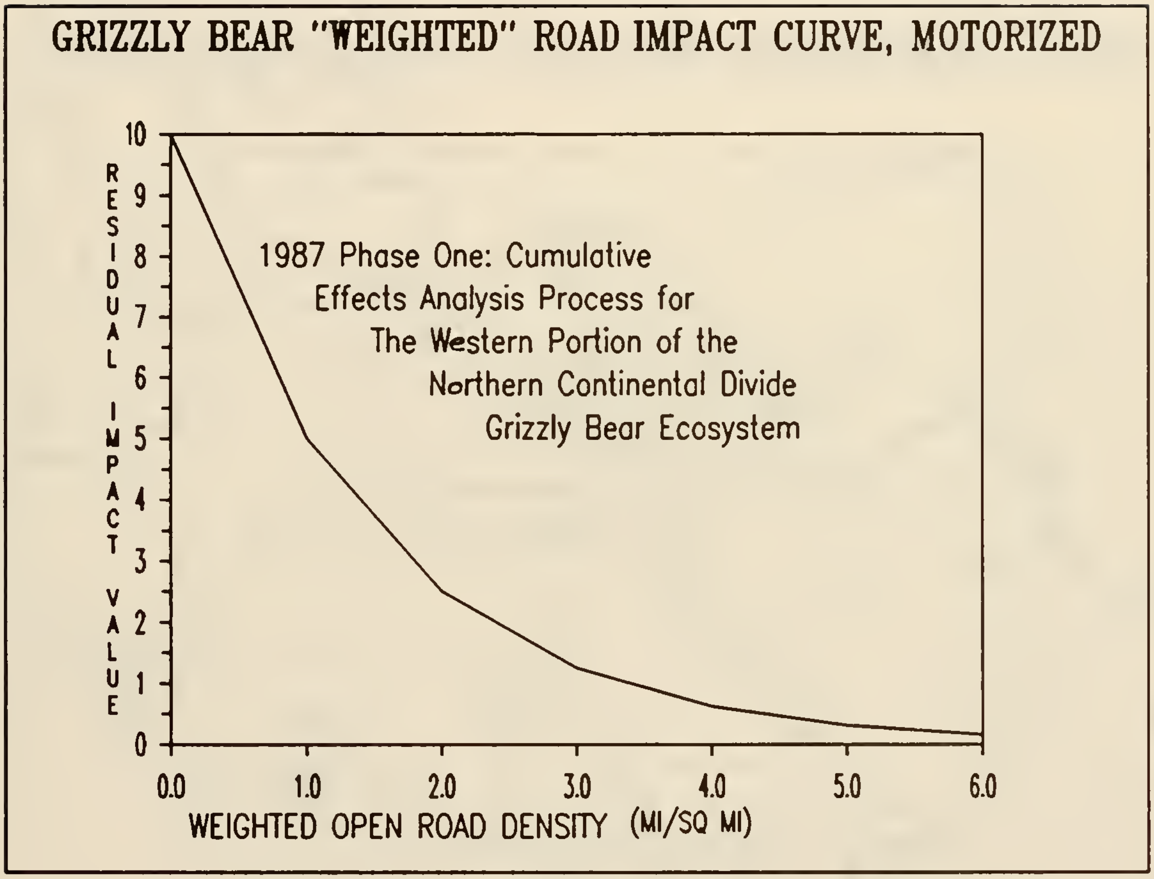
A curve, figure H-3 and H-4, was developed for grizzly bear using impact relationships displayed in "Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem" (1987). The curve was developed using weighted road levels of 0 to 6 mi/mi^2 at 1 mi/mi^2 increments. Impacts were considered multiplicative when dealing with overlapping zones of influence. "Weighted" mile density were not assumed to have overlapping zones of influence between 0-1 mi/mi^2, while "weighted" mile density were assumed to all have overlapping zones when density levels were greater than 1 mi/mi^2. Impact reductions were made using the residual value of the previous density increments. Impacts from weighted road miles that were not whole miles were considered to have a value that lies on a straight line between the closest upper and lower whole mile density.

Table 5 - Disturbance Coefficients (DC) reflecting Activity Category, Zone of Influence (ZI), and Cover Category.

ACTIVITY GROUP	COVER		NON-COVER	
motorized linear, high use	ridge line 0.8 km	0.5	ridge line 3.2 km	0.4
motorized linear, low use	ridge line 0.8 km	0.9	ridge line 3.2 km	0.8
motorized point, diurnal, high intensity	ridge line 1.6 km	0.3	ridge line 3.2 km	0.2
motorized point, diurnal, low intensity	ridge line 1.6 km	0.7	ridge line 3.2 km	0.6
motorized linear, 24-hour	ridge line 1.6 km	0.2	ridge line 3.2 km	0.1
motorized dispersed	N/A	0.5	N/A	0.4
non-motorized linear, high use	0.2 km	0.8	line-of-sight 0.8 km	0.7
non-motorized linear, low use	none	1.0	line-of-sight 0.8 km	0.9
non-motorized point, diurnal	0.5 km	0.8	line-of-sight 0.8 km	0.5
non-motorized linear, 24-hour	0.5 km	0.5	line-of-sight 0.8 km	0.3
non-motorized dispersed, high use	N/A	1.8	N/A	0.7
non-motorized dispersed, low use	N/A	1.0	N/A	0.9
explosives	ridge line 1.6 km	0.5	ridge line 3.2 km	0.3
low flying aircraft	ridge line 3.2 km	0.1	ridge line 3.2 km	0.0

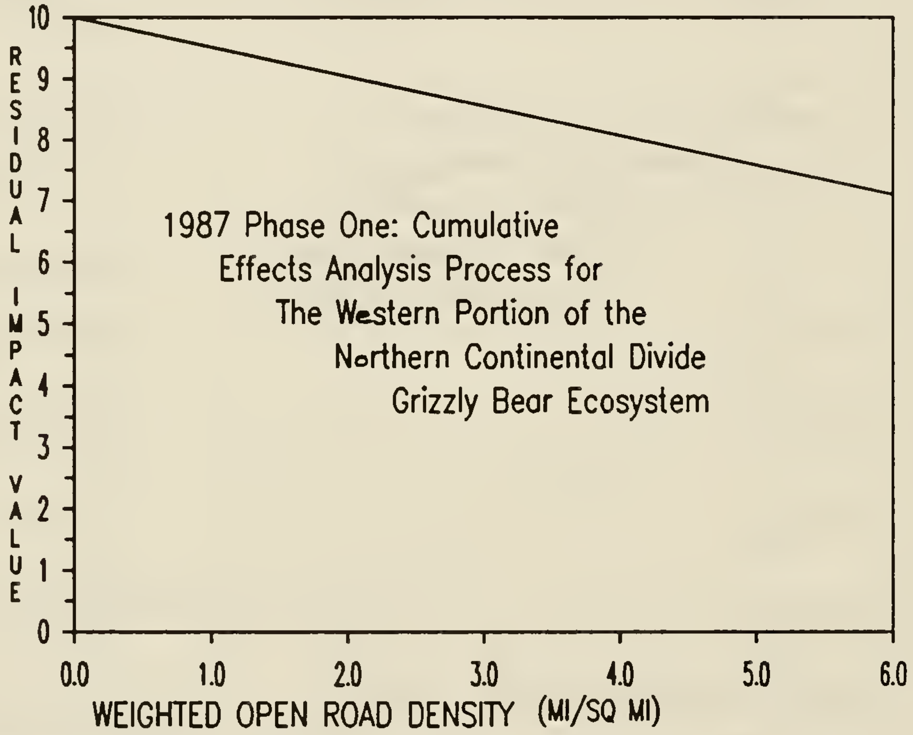
Activity Duration

The determination of an activity coefficient is calculated during the analysis phase and is used in both habitat effectiveness and mortality risk formulas. This coefficient is simply the proportion (0 to 100 percent of the activity's duration in relation to the assessment period). A seasonal (spring, summer, fall, denning) assessment period is envisioned for most analyses.

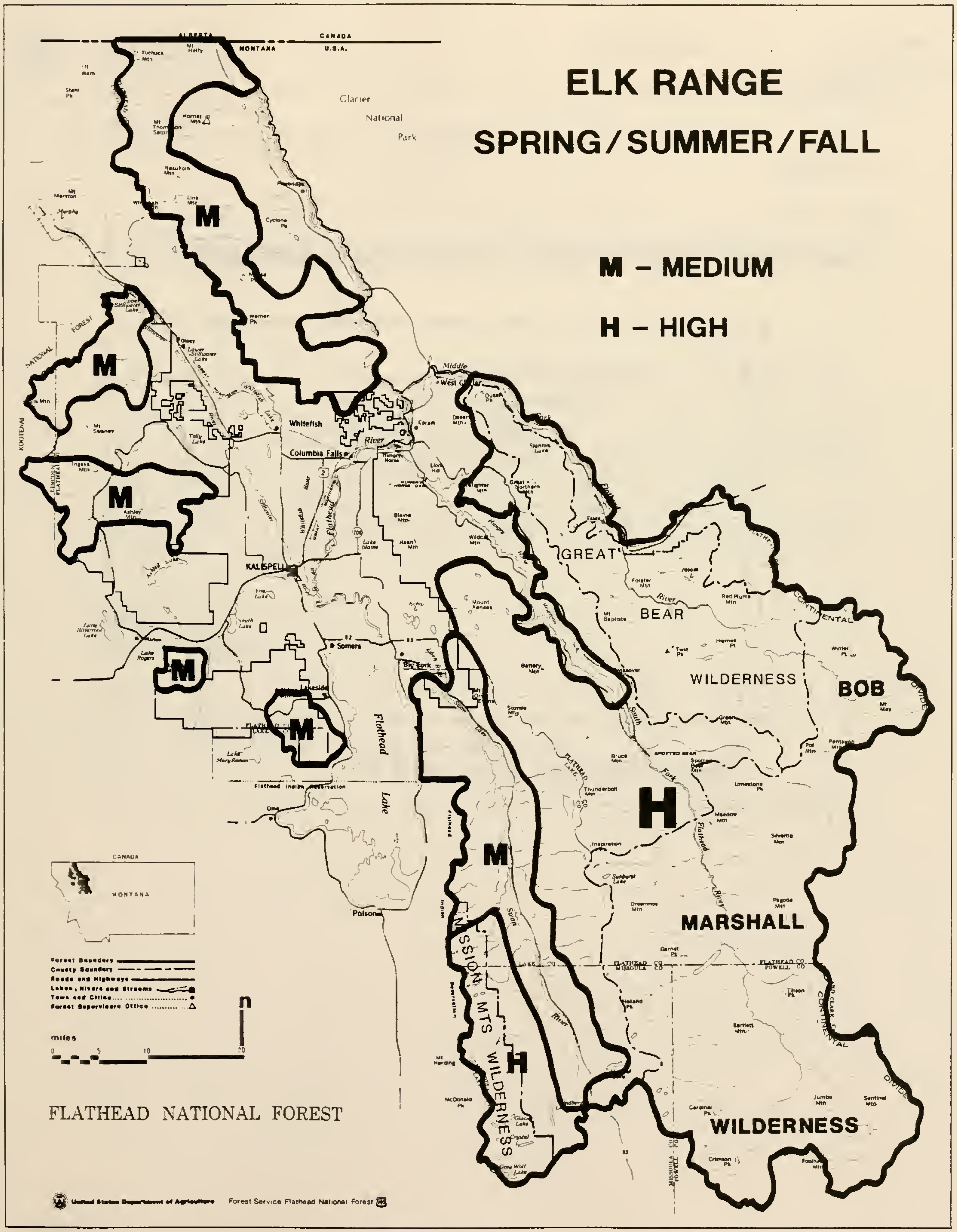


GRIZZLY BEAR "WEIGHTED" ROAD IMPACT CURVE, MOTORIZED

GRIZZLY BEAR HIGH USE TRAIL IMPACT CURVE, NON MOTORIZED



1987 Phase One: Cumulative
Effects Analysis Process for
The Western Portion of the
Northern Continental Divide
Grizzly Bear Ecosystem

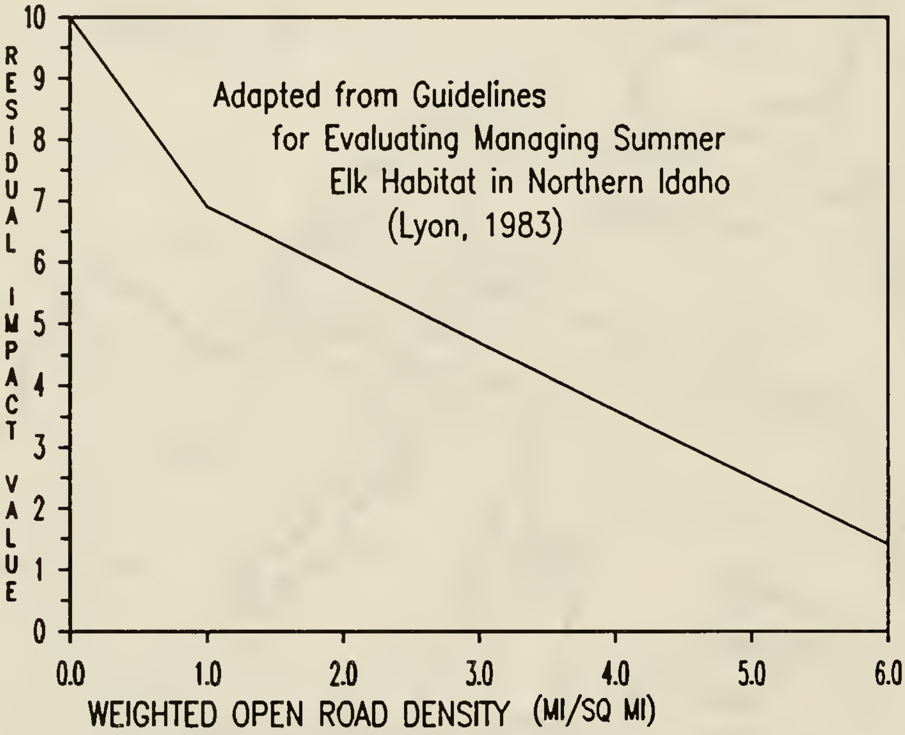


ELK RANGE
SPRING/SUMMER/FALL

M – MEDIUM

H – HIGH

ELK "WEIGHTED" ROAD IMPACT CURVE, MOTORIZED



Adapted from Guidelines for Evaluating Managing Summer Elk Habitat in Northern Idaho (Lyon, 1983)

CP WE —

United States
Department of
Agriculture

Forest
Service

R-1

Planning — 1920 Consultation w/other Agencie

REPLY TO: 2670 Threatened and Endangered
Plants and Animals

1920 Land and Resource Management Planning

Date: May 23, 1985

RECEIVED
MAY 24 1985
FLATHEAD N.F.

SUBJECT: Biological Opinion on Proposed Forest Plan

TO: Forest Supervisor, Flathead NF

Enclosed is the U.S. Fish and Wildlife Service non-jeopardy opinion on your Proposed Forest Plan.

The biological opinion made no reference to the 94,197 acres to be managed as key grizzly habitat. However, I am pleased and wish to commend you for your ingenuity and willingness to designate these acres for field application of research data in an attempt to improve grizzly bear habitat. The implementation of this management program should be a large step forward in our grizzly bear recovery efforts.

TOM COSTON
Regional Forester

Enclosure

cc: Mt. FW&P, w/enc.

U-1010-L

Planning —

1920-Consultati
w/Other Agencies

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:
6-1-83-F-003

May 15, 1985

RECEIVED
MAY 16 1985
Flat. Nat'l. Forest

Tom Coston
Regional Forester
U.S. Forest Service
Region 1
Federal Building
Box 7669
Missoula, MT. 59807

Dear Mr. Coston:

This is the Fish & Wildlife Service's (FWS) biological opinion prepared in response to your February 7, 1985 request to re-initiate formal consultation on the Flathead National Forest Proposed Plan. Consultation was first initiated on March 2, 1983 but was suspended on May 17, 1983 at your request so that direction provided in the Northern Region Grizzly Bear Action Plan could be incorporated into the Forest Plan. The FWS has examined the proposed plan in accordance with the Section 7 Interagency Cooperation Regulations (50 CFR 402, 43 FR 870) and the Endangered Species Act, as amended. This biological opinion refers only to the potential effects on threatened and endangered species and not the overall environmental acceptability of the proposed action.

Project Description

The proposed Flathead Forest Plan sets forth Forest- wide goals and objectives, land use allocations, management area prescriptions, standards and guidelines, and monitoring and evaluation requirements to establish direction for management of the Flathead National Forest.

Biological Opinion

It is the FWS biological opinion that implementation of the proposed Flathead Forest Plan is not likely to jeopardize the continued existance of the grizzly bear(Ursus arctos horribilis), gray wolf(Canis lupus), bald eagle (Haliaeetus leucocephalus) or peregrine falcon (Falco peregrinus).

Basis of Opinion

Grizzly Bear:

In this consultation, the FWS has reviewed the Forest Plan to determine if the allocation of land resources will preclude the survival and recovery of the grizzly bear and whether the management areas and their management direction and guidelines will provide for the recovery of the grizzly.

While the Forest Plan projects the amount of grazing, timber to be harvested, and facilities to be constructed as well as the acres to be developed in the management areas, it is impossible to: (1) identify site specific impacts of programs or activities; (2) relate specific project impacts to specific biological components of grizzly habitat and how they will affect the manner in which grizzlies use an affected area; (3) identify cumulative impacts; or (4) predict the degree of compliance/coordination with grizzly bear management prescriptions and guidelines. Therefore, it is impossible through one consultation to render a biological opinion on all programming and activities identified in the Forest Plan. Thus, additional consultation will be required on each program activity or project that the Forest Service determines may affect threatened and endangered species at the time it is designed and implemented.

To assure the viability of the Northern Continental Divide Grizzly Bear (NCDGB) population and habitat, Forest activities must be at a level and conducted in a manner to assure that (1) bears are not adversely impacted directly, indirectly, or cumulatively; (2) important habitat components are not adversely modified or destroyed; and (3) that sufficient space is left undisturbed from detrimental human activities to meet the biological requirements of grizzly bears. These objectives can be met in the Forest planning process by: (1) allocating sufficient space to accommodate grizzly recovery in which grizzly management is the primary use or grizzly bear supportive allocations are made, and (2) prescribing in areas of occupied grizzly habitat that have non-supportive allocations sufficient grizzly prescriptions to assure that the activities are made compatible with the biological requirements of the bear.

The lands allocated to grizzly bear habitat management (management areas 11, 11A, 11B, and 11C), stratification of occupied grizzly bear habitat into management situations 1, 2, and 3, and implementation of their attendant management guidelines provide a process to assure that the above objectives are met. We believe that if the occupied habitat is managed in accordance with the direction for MS1, 2 and 3 and that human/bear conflicts are minimized so as to prevent human-induced mortalities, the grizzly population will respond by expressing the parameters identified for recovery in the Grizzly Bear Recovery Plan. Thus, this opinion is contingent upon the guidelines for MS1, 2, and 3 being fully implemented and that the stratification submitted in this consultation remains in effect.

An area of particular concern in this consultation, however, is that the Forest Plan not project a level of timber harvesting that would be incompatible with grizzly bear management objectives e.g. the volume target for timber must not preclude recovery. This means that the 10 - year timber harvest schedule must be evaluated and adjusted, if necessary, to assure that recovery of the bear can be accomplished.

After the habitat stratification had been completed and guidelines developed for the Flathead Forest we requested on March 22, 1985 the 10-year timber harvest schedule that may have been readjusted as a result of application of the grizzly guidelines. Review and application of the guidelines by the Glacier View Ranger District (GVRD) personnel showed that in fact the GVRD timber sale program required some readjustment in order to comply with the guidelines and direction for MS1. On March 29, 1985 the Flathead Forest Supervisor responded to our request by stating that a 10 - year timber sale schedule for the first decade was not completed and that the "final" 10 - year sale plan could not be completed until they had received our biological opinion.

In view of the significance of scheduling timber sales in time and space to ensure that the spacial needs of the grizzly are met and that the cumulative impacts are within an acceptable threshold, we are providing additional criteria in the Recommendation Section of this opinion that the Forest may find helpful in establishing an acceptable timber sale program. Through informal consultation and formal consultation if necessary, we will review with the Forest the 10 - year sale program when it is completed.

A second area of concern is the extent of grizzly habitat that will be roaded as a result of the timber sale program. The miles of road to be constructed is a function of the acres scheduled for timber harvest and the mix of logging systems employed. As of 1980 there were 3,146 miles of existing roads on the Forest (1.6 miles per square mile based on 1,961 square miles outside wilderness designations, Forest Plan page VI-31). The proposed plan projects an additional 2,881 miles to be constructed bringing the total miles of road on the Forest to 6,027 or an average road density at full development of 3.1 miles per square mile. The road density based on acres suitable for timber management will be 5.4 - 5.6 miles per square mile.

The grizzly bear guidelines state that "road management will be conducted to assist in meeting grizzly bear management goals. When warrented, roads will be closed seasonally or year long and where appropriate, area closures will be applied. Transportation plans and travel plans as well as individual project road systems will be evaluated regarding their impacts on habitat effectiveness". Grizzly bear habitat management goals will eventually be established for each bear management unit now being identified through development of the cumulative effects analysis (CEA) model and will be expressed as a percent habitat effectiveness needed to recover the grizzly. The CEA model will help identify an open road density that is compatible with the bear management objectives. However, until the CEA model is operational, we recommend that in the interim an open road density of 1 mile per square mile of habitat or less be maintained in MS1 and approximately 2 miles per square mile of habitat or less be maintained in MS2. The projected road densities in the Forest Plan clearly indicate that a substantial road closure program will be required to meet grizzly management objectives.

Gray Wolf:

Managing for wolf recovery by incorporating into the Forest Plan the wolf management zone concept outlined in the draft revised Northern Rocky Mountain Wolf Recovery Plan represents a positive conservation measure. Recognition of the management zones and their definitions will help assure that activities on the Forest are coordinated with wolf management objectives so as not to jeopardize the gray wolf. The FWS supports the habitat management direction in the gray wolf guidelines for Flathead National Forest. However, given that pack activity presently exists on the Flathead and that there is an on-going research program involving radio telemetry techniques, we believe that additional detail should be given to the guidelines to assure that adequate protection is given to denning and rendezvous activities. Our recommendations are presented in the Recommendation Section of this opinion. As more information is gathered from the research program, the guidelines should be reviewed and revised accordingly.

Two major factors in managing for wolf recovery include: (1) the maintenance of a year-round prey base (primarily deer, elk, moose, and beaver) and (2) avoidance of wolf/human conflicts/encounters that result in mortality. The proposed northwest Montana wolf recovery area generally coincides with the NCDGBE. Review of the grizzly bear guidelines and those for coordinating elk and timber management (Coordinating Elk and Timber Management-- Final Report of the Montana Cooperative Elk-Logging Study 1970-1985) indicate that the two are very similar. Thus, the management direction and guidelines developed for grizzlies on the Flathead National Forest will also have direct beneficial effects on the wolf. This direction plus the Forest-wide guidelines for elk and riparian habitat and the management areas established for whitetailed deer, mule deer and elk winter habitat helps ensure that a year-round prey base for wolves is maintained and security provided.

Peregrine Falcon:

Available data indicate that there is at least one historic peregrine falcon eyrie on the Flathead NF. Although there are no known active eyries on or adjacent to the Flathead NF at this time, the potential exists for peregrine falcons to reoccupy historic sites.

Peregrine reintroduction efforts are currently underway in Montana, Idaho, Wyoming, Colorado, and Utah. In 1984, peregrines bred and fledged young at one site in southwest Montana and one site in northwest Wyoming. These two pairs of peregrines represent the only known breeding peregrines in Montana and Wyoming since the late 1970's. All four adults were captive bred and reintroduced birds. Peregrines are extremely mobile birds: a subadult female hacked in southern Colorado spent the next summer at a hack site in northwest Wyoming. The possibility of peregrines reoccupying historic sites on the Flathead NF needs to be considered in project planning. We recommend the Flathead NF work with Ron Escano in your Regional Office regarding annual reoccupancy surveys of historic eyries on the Flathead NF. Although peregrine falcon reintroduction plans for Montana do not include hacking birds on the Flathead NF during the next 5-10 years, we recommend that the Flathead NF develop a management/contingency plan so that you will be prepared to address peregrine recovery, should birds become reestablished on the Flathead NF.

The recovery plan for the Rocky Mountain Southwest population of the peregrine falcon is currently under revision and scheduled for completion in the next few months.

Bald Eagle:

Bald eagle populations have been increasing in western Montana since 1980 when intensive eagle nesting surveys were initiated. Coordinated winter trend surveys began in 1979. Although peak numbers of bald eagles occur in Montana during spring and fall migrations; winter distribution is not well understood, and specific winter roosts, feeding areas and migration corridors, are not well documented.

Because eagles are year-round residents on and near the Flathead NF, activities on the Flathead NF have the potential to either beneficially or adversely affect them. While human caused mortality factors such as shooting, poisoning, and electrocutions continue to threaten the bald eagle; the loss of habitat continues to be the most significant long term threat to the bald eagle, and should be carefully evaluated in long term forest management planning.

The Pacific States Bald Eagle Recovery Plan is undergoing agency review. The final recovery plan is scheduled to be out in fiscal year 1985. The primary objective in the recovery plan is to provide secure habitat, both for breeding and wintering populations of bald eagles. Efforts have been underway since 1982 to develop the Montana Bald Eagle Management Plan (MBEMP) under the direction of the interagency Montana Bald Eagle Working Group. The purpose of the MBEMP is to implement the recovery plan on a local basis in Montana. The MBEMP is being prepared for agency review, and should be available as a working document for land management agencies in Montana within the next year. We recommend that you consult the MBEMP and working group members when developing specific activities and programs under the Flathead Plan that have the potential to affect the eagle.

Identification of winter roosts, feeding areas, and spring and fall migration routes need to be completed so that effects of Flathead NF activities and programs can be adequately evaluated in relation to the bald eagle. Without documentation of such areas, impacts of logging, recreational developments, etc. cannot be fully evaluated. The significance of Flathead NF resource allocations to protect and maintain habitat for wintering populations of eagles should not be understated. A reasonable assumption and prediction can be made that the condition of bald eagles that return to breeding sites in the late winter or early spring will directly influence their breeding success. And obviously, eagles that die during the winter due to inadequate food and/or shelter will not contribute further to the recovery of the species.

Recommendations

Grizzly Bear:

The following criteria are presented to assist in scheduling timber sales in time and space for the 10-year timber sale schedule. The criteria were developed to apply more specific direction with respect to (1) duration of activities, (2) timing of re-entry, and (3) definition for security areas. The criteria, if applied, will help prevent the timber program from coming into direct conflict with grizzly recovery objectives requiring major modifications in the scheduling of sales and adjustments in timber volume targets. The CEA model when available, will help validate the level of harvest scheduled or show where adjustments can be made.

Criteria for:

1. Duration of activity

   A. In MS1-- restrict sale activities to no longer than 3 consecutive years

   B. In MS2-- restrict sale activities to no longer than 5 consecutive years

2. Re-entry

   A. In MS1-- one entry per decade

   B. In MS2-- (a) a minimum of 2 years inactivity following 1-3 years of consecutive activity, (b) a minimum of 5 years of inactivity following 4-5 years of consecutive activity

   C. For both MS1 and 2, re-entry should not occur unless 40% or more of the drainage can be maintained in cover (20% hiding, 20% thermal, 10+% in either hiding or thermal cover) distributed evenly throughout the area

3. Security Areas

   A. In both MS1 and 2 provide security areas immediately adjacent to the influence zone of the project area on a site by site basis. Security areas typically should be 5,000 acres or larger (or contain a similar compliment of components that existed in the disturbance zone) and be in areas that are roadless or where the open road density is one mile per square mile or less.

Gray Wolf:

The following criteria are provided to assist in designing timber sales to assure adequate protection to dennng and rendezvous activities and to key habitat components of the wolf's prey species.

1. Logging activities should not be conducted in or near the following areas at certain times of the year: (a) within one mile radius of known or highly suspected wolf whelping dens and initial rendezvous sites 15 March-1 July; (b) ungulate calving/fawning areas 1 May - 15 July; and (c) crucial ungulate winter ranges 1 December - 15 April. The dates and locations given may vary and should be based on the current ongoing wolf research.

This completes the FWS biological opinion on the proposed Flathead Forest Plan. If the proposed plan should change significantly resulting in impacts not considered in this biological opinion consultation should be reinitiated. Your cooperation and interest in meeting our joint responsibility under the Endangered Species Act is appreciated.

Sincerely,

Wayne G Brewster

Wayne G. Brewster
Field Supervisor
Endangered Species

cc: Director, FWS, Washington D.C. (OES)
Regional Director, FWS (FA/SE), Denver, CO.
Grizzly Bear Recovery Coordinator
Field Supervisor, ES, FWS, Billings, MT.
Forest Supervisor, Flathead NF

BIOLOGICAL EVALUATION

FOR THE

PROPOSED FLATHEAD NATIONAL FOREST PLAN

INTRODUCTION

The Flathead National Forest planning process recognized the grizzly bear, gray wolf, bald eagle, and peregrine falcon as the species to be considered under the Endangered Species Act (ESA).

This evaluation determines a "may effect" positive for grizzly bear and gray wolf and "no effect" for bald eagle and peregrine falcon. The basis for this determination is embodied in the proposed Forest Plan (PLAN) and Draft Environmental Impact Statement (DEIS) documents included with this evaluation.

This evaluation serves primarily to facilitate the use of the PLAN and DEIS during the consultation procedure under Section 7.

BACKGROUND

Currently, the Flathead Forest is managed under direction provided in Unit Plans and District Multiple Use Plans where unit plans have not been completed. Most of these plans predate the ESA, thus specific direction for threatened or endangered species is limited. In terms of land allocation only the 33,000 acre Nasakoin area was recognized because of its importance to grizzly bear.

This PLAN presents an array of land allocations with management direction that responds to the National Forest Management Act (NFMA) relative to threatened and endangered species. It also responds to the threatened and endangered species issue, identified early in the planning process, particularly in terms of the grizzly bear.

The following is intended to focus on aspects of the PLAN and DEIS that should be used by the Fish and Wildlife Service when rendering their "opinion" under Section 7 of the ESA.

GRIZZLY BEAR AND GRAY WOLF

Early in the Planning process the interdisciplinary team agreed to consider the grizzly and wolf together for purposes of land allocation. This was done because their primary need (security) and location of their "best" habitat fairly well overlapped. The plan recognizes that should wolves locate as a "pack" outside of the areas allocated the PLAN will be reevaluated.

The "may effect" positive determination is based primarily on the following key items in the Plan.

1. A Forest goal that establishes an overall emphasis to provide for a recovered grizzly bear population (II-1).

2. Forest-wide guidelines that provide for the protection and management of bear and wolf habitat (II-12).

3. A road access management program that provides the needed use restrictions and closures in areas allocated to bear and wolf. In addition specific direction for road access management designed to provide secure travel routes within areas allocated to other resource uses and activities.

4. Allocation of more than 92,000 acres that emphasize management of bear and wolf habitat.

BALD EAGLE AND PEREGRINE FALCON

Bald eagles inhabit the Forest as nesting residents and as winter migrants. The winter population approaches 1,000 birds. Peregrine falcons are not known to nest within the Forest boundary but have been noted as migrants. Existing and potential habitat for each species has been mapped and is part of the PLAN data base. No specific land allocations for either species has been made.

The "no effect" determination is based on the following:

1. Forest-wide guidelines (Chap. II, page 13) that adequately protect nesting and feeding sites.

2. An array and distribution of land allocations (Management Areas 2, 3, 11, 12, 14, 17, 18, 21, 22, and 23) with specific direction that adequately protects the two species.

SUMMARY

It is my determination that the direction provided in the Proposed Flathead Forest Plan will not adversely modify or destroy habitat, of the mentioned species, as defined in the Endangered Species Act. It is also in compliance with the planning criteria regarding threatened and endangered species in the NFMA Regulations (36 CFR 219).

Robert G. Hensler

ROBERT G. HENSLER
Wildlife Biologist

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UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Fish and Wildlife Enhancement
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:
M.19 Flathead National Forest Plan
(6-1-85-F-003) & Amendments
(6-MT-89-F-002)

July 18, 1989

Mr. John W. Mumma, Regional Forester
U.S. Forest Service - Region 1
Federal Building, P.O. Box 7669
Missoula, Montana 59807

Dear Mr. Mumma:

amended

On May 15, 1985, the U.S. Fish and Wildlife Service (Service) issued a no jeopardy biological opinion on the Flathead National Forest Land and Resource Management Plan (herein referred to as Forest Plan). Since that time, the Service has revised the regulations that govern the Section 7 consultation process. These regulations (Interagency Cooperation - Endangered Species Act of 1973, as amended; 50 CFR Part 402) were published in the Federal Register of June 3, 1986. By way of this letter the Service administratively amends the 1985 and 1989 biological opinions on the Forest Plan and Forest Plan Amendments, to conform to the revised regulations by providing an incidental take statement (absent in the 1985 opinion), and to clarify the following: (1) scope of agency action consulted on; (2) current status of listed species; (3) effects of the action on listed species; and (4) recommendations made in the 1985 biological opinion.

A table of contents has been included (next page) because of the complexity and length of the supporting text.

TABLE OF CONTENTS

Page

Agency Action 2

Current Status of Listed Species 4
  Grizzly Bear 4
  Gray Wolf 6
  Bald Eagle 6
  Peregrine Falcon 6

Effects of the Action and Cumulative Effects 7
  Grizzly Bear 7
  Gray Wolf 24
  Bald Eagle 27
  Peregrine Falcon 28

Conservation Recommendations and Clarification of Recommendations in 1985 Biological Opinion 29

Incidental Take Statement 30

References Cited 33

Agency Action: This amendment to the Service's 1985 and 1989 biological opinions covers the Flathead National Forest Plan, as amended. As a result of appeals to the Forest Plan, Amendments to the Forest Plan were proposed. The Service, through formal consultation, reviewed proposed Amendments 3 through 14 and issued a no jeopardy biological opinion on February 22, 1989. We have reviewed the draft Final Amendments submitted in your June 9, 1989 letter (Appendix A) that were prepared after considering our February 22, 1989 biological opinion and comments from the public. The draft Final Amendments incorporate our recommendations made in our February 22, 1989 biological opinion. We agree that changes made between the proposed and final Amendments will not result in impacts not previously considered in our biological opinion. Therefore, reinitiation of formal consultation on the Amendments is not required.

The Forest Plan, as amended, is a general programmatic planning document that provides management goals, objectives and standards and guidelines under which project level activities (e.g., timber sales and associated roads) may be planned and implemented to carry out the management direction of the Forest Plan. Land use allocations are made and outputs projected based upon the constraints imposed by the Forest Plan direction and guidelines. The Forest Plan management areas and forest-wide direction are the "ordinance" under which future decisions are made. All project level activities will undergo National Environmental Policy Act (NEPA) review when proposed, as well as a review under Section 7 of the Endangered Species Act. The Forest Plan sets out management prescriptions and standards and guidelines for future decision making, and are adjustable through monitoring and evaluation, amendment and revision. Thus, the Forest Plan is never "finished".

The Forest Plan does not provide a "right" to any company, corporation, agency or individual to conduct an activity. An activity/program implemented under the Forest Plan direction undergoes separate NEPA and Section 7 reviews, after which a decision notice is prepared for that activity. Thus, no irreversible or irretrievable commitment of forest resources is made in the Forest Plan, but rather at the point in time when a particular activity/program is proposed and undergoes its own NEPA and Section 7 reviews and a decision notice signed.

For the above reasons, the Section 7 consultation on the Forest Plan focused on the review of the management direction (Forest-wide management requirements and management area prescriptions). Through the informal and formal consultation process, the Service and Flathead National Forest developed and incorporated into the Forest Plan management guidelines for bald eagles and peregrine falcons (Appendix B) and grizzly bear and gray wolf management frameworks (Appendix C and D, respectively) within which Forest Plan activities will be conducted. For the grizzly bear, this management framework consisted of (1) stratifying the occupied grizzly bear habitat into Management Situations I, II and III pursuant to the "Yellowstone Guidelines" (now the Interagency Grizzly Bear Management Guidelines, 51 FR 42863, November 26, 1986); (2) incorporating within the Forest Plan the definition and management direction for each Management Situation as per the Interagency Grizzly Bear Guidelines; and (3) developing standards and guidelines specific to the Flathead National Forest situation for coordinating multiple use activities with the grizzly bear which are consistent with the management direction for each management situation. Amendment number 9 to the Forest Plan incorporates the Interagency Grizzly Bear Guidelines in their entirety as part of the Forest Plan. A similar management framework for wolves was also developed and incorporated into the Forest Plan (Appendix D). Thus, the Forest Plan provides specific direction and guidance for coordinating other multiple use activities with biological requirements of the listed species that occur on the Flathead National Forest. The Forest Service, by authorizing the Forest Plan, committed to conducting its timber program, road management program, recreational program, etc. within the constraints of the grizzly bear standards and guidelines and those developed for other listed species. The Flathead National Forest Supervisor, in a March 29, 1985, letter to the Service stated that "If we anticipate more sales than can actually fit within grizzly bear constraints, then we will either have to reduce volumes or shift sales to unoccupied areas" (Appendix E).

Outputs projected by the Forest Plan, during the first decade, for the activities of recreation, grazing, logging, and roads are as follows:

Recreation: The Forest Plan, during the first decade, indicates that developed recreation sites will be maintained at current levels. Public developed sites include six resorts and 28 campgrounds and picnic areas. Additional developed site facilities include boat ramps, swimming areas, and trailhead facilities. Approximately 98,100 acres of the 495,400 roadless acres inventoried in 1983 would be proposed wilderness, with an additional 380,300 acres to remain roadless. The trail system will be maintained at current levels with emphasis on reconstruction of 50 miles of substandard trails.

The Forest currently receives approximately 500,500 recreational visitor days (RVD's) of use in dispersed areas. About 77 percent of this use occurs in a roaded environment (including activities such as berry picking, snowmobiling, fishing, hunting, driving for pleasure, and roadside camping, while 23 percent occur in an unroaded environment (backpacking, hiking, fishing, hunting, etc.). Projected dispersed RVD's is expected to exceed 774,000 RVD's by 1995.

The Flathead National Forest administers all of the Mission Mountains and Great Bear Wilderness and about 70 percent of the Bob Marshall Wilderness. These areas comprise about 5 percent of the National Wilderness Preservation System in the lower 48 States and about 46 percent of the Forest's land base.

Grazing: The Forest Plan, during the first decade, projects that 6,200 animal unit months (AUM) may be permitted. The Forest's actual grazing during 1980 was 3,654 AUMs (nonwilderness). The normal grazing use season runs from June through September and most permittees have cow/calf operations. The Swan Lake and Tally Lake Ranger Districts provide nearly all of the domestic livestock grazing opportunities. No sheep allotments are permitted on the Forest.

Logging: The Forest Plan, during the first decade, provides direction to program up to the allowable sale quantity of 1 billion board feet of timber from suitable lands so that the uncut volume under contract will remain near 300 million board feet (MMBF). The annual program of sale offerings may range from 70 MMBF to 130 MMBF during this period. Timber regeneration harvest after the first decade will have taken place on 66,000 acres at an average annual level of 100 million board feet. Reforestation will be accomplished on 66,070 acres. Timber stand improvement will be applied on 34,000 acres.

To accomplish the above level of timber harvest, approximately 508 miles of road may be added to the road system. Miles of major reconstruction will be 170.

The following table presents by district the volume projected to be harvested over the first decade, acres to be cut, and roads needed:

District	Timber (MMBF)	Acres	Roads (Miles) Construction	Reconstruction
Swan Lake	310.0	14,770	106.8	50.7
Hungry Horse/ Spotted Bear	231.4	13,171	97.3	95.7
Glacier View	152.0	8,264	88.1	16.4
Tally Lake	341.6	15,201	55.5	5.0

Roads: The Forest Plan, during the first decade, projects that approximately 508 miles of road may be added to the road system. Miles of major reconstruction will be 170. The new roads are primarily local logging roads that will be permanently or seasonally closed.

Current Status of Listed Species: During the consultation, the Service evaluated and considered the status of the listed species. The following summarizes the current status of listed species that occur on the Flathead National Forest.

Grizzly Bear - There is an estimated current population of 549-813 grizzly bears for the Northern Continental Divide grizzly bear ecosystem (Montana Department of Fish, Wildlife and Parks, Grizzly Bear EIS, 1986). Approximately 36 percent of the habitat for this population occurs on the Flathead National Forest. The recovery goals for the grizzly bear population in the Northern Continental Divide Ecosystem were established in the 1982 Grizzly Bear Recovery Plan as:

- a population of 440-680 with a mean goal of 560 bears; and
- attainment of a set of biological parameters or their biological equivalents.

Parameters for assessing population status have been identified for inclusion in the revision of the 1982 Grizzly Bear Recovery Plan. These parameters include (1) the unduplicated sightings of females with cubs of the year, (2) distribution of females with young in the Ecosystem, (3) mortality, and (4) a conservation strategy. Targets for meeting these parameters are presently being established and will be calculated on a running three year average. The following table presents population parameters from the 1982

Grizzly Bear Recovery Plan, the draft recovery parameters and their targets being considered for the revised Recovery Plan, and current parameter estimates.

PARAMETERS	1982 RECOVERY PLAN*	CURRENT ESTIMATE**
POPULATION GOAL:	560	549 - 813
MEAN CUB LITTER SIZE	1.78	1.7 - 2.66
MEAN LITTER FREQUENCY (YEARS) (REPRODUCTIVE CYCLE)	3.0	2.1 - 3.3
MEAN PRODUCTION RATE (REPRODUCTIVE CYCLE)	0.593	0.515 - 1.267
ANNUAL NUMBER OF FEMALES WITH CUBS	56.0	68
AVERAGE ANNUAL KNOWN MAN-CAUSED MORTALITY	25.0	18.2
AVERAGE ANNUAL TOTAL MORTALITY AS % OF TOTAL POPULATION	17.1 - 18.7	7.1 (MAN-CAUSED)

*STATISTICS OR THEIR BIOLOGICAL EQUIVALENTS COMPUTED AS A RUNNING SIX-YEAR AVERAGE (PAGE 60)
**MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS LETTER DATED NOVEMBER 28, 1988

PARAMETERS	NCD RECOVERY DRAFT #3	CURRENT ESTIMATE
PRODUCTION - UNDUPLICATED COUNT OF FEMALES WITH CUBS OF THE YEAR	30*	26.0 (1987-27; 1988-25)
OCCUPANCY - COUNT FEMALES WITH OFFSPRING	AT LEAST 1 FAMILY UNIT IN 20 OF 24 BMUs**	18 (1987-88)
MORTALITY - INVENTORY ALL	NTE 14 TOTAL PER YEAR KNOWN HUMAN-INDUCED OR (6) FEMALES OUTSIDE GNP	12(6)-1986 9(6)-1987 8(6)-1988
HABITAT - MAINTAIN EFFECTIVENESS CONSERVATION STRATEGY PLAN	AS DEVELOPED, UTILIZE CUMULATIVE EFFECTS MODEL (CEM)	ONGOING; UTILIZE BEST DATA AVAILABLE

*COMPUTED AS A RUNNING THREE YEAR AVERAGE. GNP=Glacier National Park
**COMPUTED AFTER THREE-YEARS OF CUMULATIVE REPORTS. NTE=not to exceed.

Gray Wolf - Natural recolonization is presently occurring in northwestern Montana as a result of dispersal of animals from wolf populations in Alberta and British Columbia and subsequent reproduction near the international border. Reproduction was first discovered in 1982 in the North Fork Flathead River drainage three miles north of Glacier National Park (GNP) with subsequent denning in GNP in 1986. Of four packs (Wigwam, Sage Creek, Headwaters, and Camas) that occurred in the North Fork Flathead River drainage during 1987, three packs now exist (Wigwam, Headwaters and Camas). Since 1986, wolf numbers have ranged between 15 and 26 animals. The population goal for down-listing wolves in the northwest Montana recovery area is 10 packs.

Bald Eagle - Bald eagles occur year-round in Montana, but their numbers fluctuate dramatically between seasons. The greatest number occurs during the spring and fall migrations. Migration peaks during March and November when large numbers of bald eagles move through the State to and from more southerly wintering areas. An estimated 450-500 bald eagles winter along major waterways within Montana. Current data on the Montana wintering population indicates stable or increasing trends. The lowest number of bald eagles occurs during the summer when approximately 78 pairs nest within the State. Nesting chronology in Montana is well documented. Nest maintenance and construction occurs during winter months. Eggs are laid between late February and late April, with peak laying during early March. Fledging dates vary accordingly, with most fledging about mid-July. Little is known of post-fledging behavior in Montana (Montana Bald Eagle Management Plan 1986).

Montana falls within the Pacific States Bald Eagle Recovery Plan (Recovery Plan) area. Seven bald eagle management zones were established in Montana which correspond to zones identified in the Recovery Plan. Implementation of recovery actions and achievement of goals are applied on a zone-by-zone basis. The Flathead National Forest lies in Zone 7, which overlaps into Idaho and Washington. The primary management goal for Montana is to provide secure habitat for bald eagle and to increase population levels in each of the management zones. The bald eagle population goal for Montana is 99 breeding pairs and the habitat goal is to provide sufficient habitat for a minimum of 140 nesting territories. The status of the bald eagle has been improving in Montana for the last decade. In 1988 there were 81 known territories, 69 of which were occupied by adult pairs. Zone 7 had 37 known territories, 26 of which were known occupied, thus representing approximately 40% of the State nesting population. Productivity data from Zone 7 in Montana are encouraging. Twenty-five of the 26 occupied nests were active, 21 successful, with 46 young fledged for a 2.19 fledged/ success rate.

Peregrine Falcon - The American peregrine falcon (Falco peregrinus anatum) was listed as endangered in 1969 (U.S. Fish and Wildlife Service 1984). A severe population decline began in the 1950's which left the western populations severely depressed. Only 20% of the breeding pairs were estimated to remain by the mid-1970's (Cade 1985). By 1980 there were no known breeding peregrine falcons in Idaho, Wyoming or Montana.

Efforts to re-establish a breeding nucleus of peregrine falcons in southwestern Montana were initiated in 1981. Between 1981 and 1988, 123 peregrine falcons were released into the Montana reintroduction area. Eighty-seven percent reached independence and can be considered successfully introduced into the wild. In 1988, three wild pairs of peregrine falcons were known nesting in Montana, all successfully produced young. The primary objective of the American Peregrine Falcon Recovery Plan Rocky Mountain Southwest Populations (1984) is to increase anatum peregrine falcon populations in the Rocky Mountain/Southwest Region to a minimum of 183 breeding pairs sustaining a long-term average production of 1.24 young per annum by 1995. The recovery goal for Montana is 20 breeding pairs. No known peregrine falcon nests occur on the Flathead National Forest and limited information exists on migrant use.

Effects of the Action and Cumulative Effects: "Effects of the action" as defined by the 50 CFR, Part 402, refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.

"Cumulative effects" as defined by the 50 CFR, Part 402, are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation. Within the boundaries of the Flathead National Forest are private and State owned lands that are being logged and will continue to be logged as the Forest Plan is implemented. The cumulative effects of the State and private activities will be considered as activities under the Forest Plan direction are planned and implemented. Forest Plan standards (page II-29) require that "for each project proposal the cumulative effects of all activities, both existing uses and other planned projects, relative to both public and private lands be evaluated".

The Forest Plan provides a 10-year schedule of management activities and forest-wide standards for 16 forest resources. For purposes of considering the effects of the action in this amendment, forest activities can be categorized into the following general activities: recreation, grazing, logging, and roads.

The following discussions describe potential impacts (direct or indirect) of Forest activities, and those that are interrelated or interdependent, on listed species that could occur in the absence of: (1) appropriate coordination measures/standards and guidelines and (2) the management framework incorporated into the Forest Plan to ensure that listed species are adequately protected.

A. GRIZZLY BEAR

1. Recreation: The following excerpts (pages 74-77) from the Grizzly Bear Compendium (National Wildlife Federation, 1987) discuss the effects of recreational use on grizzly bears:

"A number of recent studies have addressed the impacts of recreational activities on grizzly bear behavior, habitat use and survival...

Correlations between increased visitor use of designated recreational areas and grizzly bear problems have been noted in several areas (e.g., Noble 1972, Faro and Eide 1974, Mundy and Flook 1973, Martinka 1982a). In Denali National Park, Alaska, bear incidents were very uncommon prior to the opening of the park highway in 1972 and the resultant influx of visitors. Both frontcountry and backcountry incidents increased greatly during the 1976-78 period. Bear incidents were significantly correlated to the total visitation in backcountry units, with 58% of the backcountry incidents relating to a food incentive (Sizemore 1982). Similarly, Martinka (1982a) reported that in Glacier National Park, Montana, the number of bear confrontations appeared to be closely correlated with park visitation for the 1951-80 period.

Researchers in Denali noted that bear encounters could be expected to occur each year because campgrounds were located near prime bear habitat or along travel routes (Van Horn and Dalle-Molle 1984). Bear managers in other major park units have made similar observations. In Katmai National Monument, man-made facilities at Brooks River Camp interfere with the normal movements of bears fishing along the Brooks River and bring bears and humans into close proximity (Dean 1968, Troyer 1980a, Beattie 1983)...

Mortality Relating to Recreational Activity

The consequences of superimposing high recreational activity on productive grizzly bear habitat include both direct mortality and reduced habitat effectiveness... Gunson (1985) evaluated grizzly bear mortalities in Alberta for the 1972-84 period and found 12 cases of mistaken identity deaths (grizzlies mistaken for black bears), 24 cases of self-defense killings by hunters and 4 cases of problem bears killed in recreational or tourist camps. Problems involving grizzly bears attracted to hunter camps or causing other hunter related problems are also common in the conterminous states (e.g., Greer 1982, Roop 1982, 1983)...

Mattson et al. (in press b) studied the impacts of developments and primary roads on grizzly bears in Yellowstone National Park. They found that adult bears which were relocated most often within a 0-3 km zone around developments had twice the risk of mortality as adults in more remote areas. The mortality risk was nearly 5 times greater for females in the inner zone but only marginally greater for adult males. Conversely, subadults suffered their greatest mortality risk in zones furthest from developments. These results suggested that the subadults were either displaced by adult bears into the less secure zones adjacent to developments (as indicated by a model representation of subadults in the 0-3 and 3-9 km zones around developments) or stood an increased mortality risk by co-occupying the more remote zones with adult bears.

High adult female mortality risk close to developments was believed to be a consequence of habituation to predictable high density human presence. Subadults and adult males occupying the inner zone were presumably "neutral" (i.e., indifferent to human presence or developments but not actively seeking human foods) rather than habituated (seeking out human-related foods). Thus, these classes of bears were less predisposed toward conflict situations than were the habituated adult bears.

Displacement and/or Reduced Habitat Effectiveness for Nonmotorized Recreational Activity

Several recent studies have specifically addressed impacts of recreational activity on grizzly bear habitat use and activity patterns. The most intensive work has been conducted in Yellowstone National Park.

Schleyer et al. (1984) studied the effects of nonmotorized recreational activity on grizzly bear behavior and habitat use in Yellowstone. Bears were monitored for 24 hours before a simulated disturbance (an approach on foot or erection of a campsite) was initiated. They found that human activity in wilderness habitat did affect the habitat use activity patterns and behavior of grizzly bears. Six of 7 planned disturbances, and 3 incidental disturbances, caused immediate and rapid displacement of the studied bears. During the predisturbance phase, the bears' probability of activity averaged 56%, while during the immediate (0-2 hour) post-disturbance phase, the probability of activity rose to 78%. During the 2 24-hour post-disturbance period, the disturbed bears' average range length, average total daily movement and average net daily movement exceeded that of undisturbed bears. Disturbances also resulted in bears using less suitable habitat. Tested bears spent more time in dense timber further from natural openings and perennial water. They also used higher elevation, less gentle terrain and locations remote from human travel more often than did non-disturbed bears. Two of the tested bears were less sensitive to disturbance than the others. Their diminished reaction was attributed to 2 different factors; habituation for 1 and residence within a preferred foraging area (elk calving ground) by the other.

Haroldson and Mattson (1985) reported results from the second year of the Yellowstone recreation study. They noted that the earlier study (Schleyer et al. 1984, discussed above) tested bears' responses to recreational activity in improbable settings, collected no long duration post-disturbance data and failed to give adequate consideration to the bears' individual character and the unique episode conditions. In this study, Haroldson and Mattson (1985) tested the response of 3 radioed bears to simulated recreational activity by monitoring their response for 36 hours before and after they were approached at 100-400 m. Four episodes were executed as planned. Responses varied greatly by individual bear and only 1 of the 3 adult females tested exhibited a long duration response to the study's most flagrant impingement.

The researchers constructed a conceptual model to describe the factors contributing to a bears' immediate and long duration response to recreational activity. Four factors (cultural background, status, physiological state and foraging strategy) conditioned bears for a repertoire or "syndrome" which elicited a specific response according to the particular setting and level of human presence. The spatial-temporal predictability and level of human use were probably significant factors determining the level of a bears' response to "accumulated" backcountry use. The researchers concluded that Yellowstone grizzly bears were likely to experience longer duration disturbance effects than were indicated by their results since much of the Yellowstone backcountry received greater sustained, predictable recreational use than was simulated by their tests. Responses were likely to be greater for the least habituated or neutral bears and in open or productive habitats.

Gunther (1984a) and Gunther and Renkin (1985) studied the effects of backcountry recreational activity on grizzly bear use of Pelican Valley adjacent to the Fishing Bridge development in Yellowstone National Park. Of special interest was the response of grizzlies to seasonal closures of the valley to human use. The researchers found a significant difference in the number of bear sightings during the closed and open periods with a significant inverse relationship between the number of bears per day and the number of people per day (versus the average number of parties per day). The number of bear sightings within 0.4-0.8 km (0.25-0.50 miles) of backcountry campsites was dependent upon site occupancy. Fewer bears were observed near campsites when they were occupied by people. Some effects on bear habitat use were also noted. Bears were observed significantly closer to cover during the open periods than during the closed periods. (The relationship between plant phenological changes and numbers of grizzlies using the Pelican Valley was not addressed in this study.)

These findings correlated well with the results of an earlier study on the relationships between angler and bear use in the Clear Creek and Cub Creek drainages east of Yellowstone Lake (Gunther 1984b). That study indicated that in years with the highest spawning run, the number of anglers peaked but the bear fishing activity was lowest. After an area closure was initiated in 1983, the angler use reached its lowest peak and the bear use its highest level in 7 years.

Few other systematic studies of the impacts of nonmotorized recreation on grizzly bears have been conducted. McLellan and Mace (1984) reported that people travelling on foot in areas more than 500 m from a primary or secondary road resulted in strong flight responses from their study bears. People walking on primary or secondary roads or at a residence elicited a more moderate response. Schallenberger and Jonkel (1979a, 1980) measured the distance of grizzly bear relocations in the Rocky Mountain East Front to hiking trails of various use levels. They found that bears tended to be closer to low and moderately used trails than to trails receiving high or extremely high use. They noted that this result could be due to either disturbance factors or to the relative densities of the different trail types. Kasworm (1985) reported that in the Cabinet Mountains of northwestern Montana, the annual mean distances of grizzly bear relocations to roads and trails were 2467 m and 821 m, respectively.

Impacts of Recreational Developments

Mattson et al. (in press b) evaluated the impacts of primary roads and developments on grizzly bears in Yellowstone. They found that in zones beyond the conceivable influence of human emplacements, grizzly bears occupied habitat which was more productive than the average for that zone. However, in zones proximal to roads and developments, grizzlies occupied habitat which was close to, or below, the average for that zone. Thus it appeared that grizzly bear foraging strategies directed towards habitat optimization were disrupted by human emplacements. Around developments, this disruption was evident out to 3.5 km in spring and summer (less in fall). Around roads, habitat use was influenced out to 2.5 km in spring and summer and 4.0 km in fall.
Mattson et al. (in press b) also evaluated the displacement effects of human developments. They found that adult bears showed a bimodal distribution with neutral/habituated bears occupying the 0-3 km zone around developments and a group of more wary adults occupying the 9-15 km zone. All of the young adults in the study occupied the 9-15 km zone, while subadults were more often occupants of the 0-3 and 3-9 km zones. Possible explanations for the observed subadult distribution were discussed previously. Overall, roads tended to reduce grizzly bear use to a "micro" scale (0-1500 m) while developments did not. However, the concentrated human activity at developments had a much greater "micro" scale (0-15 km) effect on grizzly bear occupancy and use of habitat than did roads. This was attributed to the greater human density and persistently high levels of human activity into the nocturnal hours around developments. The researchers calculated that up to 15.7% of the available habitat production in Yellowstone was not used by adult females during summer because of primary road and development effects...

Impacts of Recreational Activity on Bear Behavior: Habituation

Habituation may be defined as a long-term decrease in the frequency or magnitude of a response as a result of a repeated stimulation (Jope 1982). Indications of grizzly bear habituation to human stimuli have been noted for several areas (e.g., Jope 1982, 1983a, 1985, Haroldson and Mattson 1985, Mattson et al. in press b).

The effect of recreational activity on grizzly bear habituation was originally discussed by Jope (1982, 1983a, 1985) with reference to grizzly bear behavior in Glacier National Park, Montana. Factors which contributed to bear habituation were a consistent context for encounters with hikers (such as along trails); frequent, irregularly spaced, encounters; easily recognized stimuli (such as hikers with bear bells); and, innocuous behavior by the hikers (Jope 1985). Jope theorized that by reducing the occurrence of "full" charges, habituation of grizzly bears' fear response actually reduced the rate of injury to hikers from surprise encounters with adult and subadult grizzlies. She noted (Jope 1982) that no recorded hiker injuries had involved a bear that appeared to be habituated.

Keating (1983) further examined the trends in grizzly bear numbers and behavior (1910-1980) relative to sightings and confrontation rates in Glacier National Park. His analysis supported Jope's (1982) observation that habituation behavior resulted in fewer confrontations per encounter. Data showed that the number of confrontations per encounter (visual contact with 1 or more grizzlies) declined exponentially at about 9% annually. However, confrontation rates continued to increase exponentially (about 5% annually) despite that trend. Thus, the total number of encounters (a function in increases in both visitation and grizzly population size) was greater than the habituation-related decline in the number of confrontations per encounter.

Kendall (in press) also studied the trends in encounter and confrontation rates in Glacier National Park. Several trends appeared to be related to the habituation behavior described by Jope (1982, 1983a, 1985). Kendall found that "approach" encounters had increased during the last 7 years and were most prevalent in areas of high visitor use. This was due either to increased visitation which brought more people into contact with habituated bears or an increase in the number of habituated bears. Kendall also found that the number of grizzly bear incidents occurring around high visitor use areas was lower than expected from the amount of visitor use these areas received. There was also a lower frequency of camper incidents in high use areas than predicted by camper distribution. Both of these findings suggested that the increased exposure to humans by grizzly bears in these areas resulted in more habituated bears or, alternatively, that management practices may have mitigated some of the expected bear problems. Kendall noted that habituation might also have deleterious consequences in that loss of the usual avoidance response could lead to more grizzly bear/camper encounters...

Haroldson and Mattson (1985) reported that most grizzly bears in Yellowstone could logically be placed into 1 of 3 categories according to their reaction to human presence and developments. "Wary" bears were those which characteristically fled from human encounters and avoided development areas. "Neutral" bears were those indifferent to human presence or developments but not actively seeking human foods. "Habituated" bears were those which tended to actively search out human-related foods. The findings of Mattson et al. (in press b) relating to habituated grizzlies in development areas were discussed previously. It should be noted that the definition of habituation applied in these 2 studies differs somewhat from the definition employed by Jope (1982, 1983a, 1985).

Impacts of Winter Recreation Activities and Developments

Literature pertaining to the impacts of winter recreation sites and snowmobile activity on grizzly bears was very limited. Madel (1983) evaluated the potential impacts of a proposed ski development in northwestern Montana. He concluded that the development could potentially influence bear use of the area by reducing the amount of secure, undisturbed habitat to a level below that necessary for normal nutritional and behavioral needs, displacing bears from important seasonal habitat components during critical use areas, causing permanent loss of seasonal habitat and increasing the possibility of undesirable grizzly bear/human interactions. Haddan and Jonkel (1983) reported that the most deleterious effects of another proposed northern Montana ski development would result from the habitat alterations and increased potential for human activity in the non-ski seasons. McCrory and Herrero (1983b) noted that the increased recreational use around Mt. Allan (site of the 1988 Olympic downhill skiing events) would result in increased possibilities of bear/human encounters. Mealey (1976) evaluated the habitat characteristics and potential impacts on grizzly bears from the proposed Ski Yellowstone development west of Yellowstone Park. His analysis of the late spring/early summer food and cover values indicated that the area was generally low-quality grizzly habitat. He therefore concluded that negative impacts from the ski facilities and adjoining resort community would be minimal.

A subsequent review of the Ski Yellowstone development by Knight and Blanchard (1984) reached different conclusions about the probable impacts of the project. Their analysis was based primarily on data collected by the Interagency Grizzly Bear Study Team and an intensive study of the development area by Blanchard (1978). They concluded that the Ski Yellowstone development had the potential of becoming a major population sink for the Yellowstone ecosystem grizzly population. From 1973-83, home ranges of 7 collared grizzlies encompassed the project area...

Impacts on grizzly bears from snowmobile activity are largely unknown. Jonkel (1980b) reported that 1 grizzly bear den was abandoned after snowmobile disturbance and another after foot disturbance. Reid et al. (1983) evaluated the effects of the proposed Clark Fork snowmobile corridor on grizzly bears. As with the ski area developments noted above, they felt that the most serious consequences of the corridor development were off-season uses. The potential for displacement and stress caused by 2-wheeled vehicular traffic was of greatest concern, especially in the late fall and early spring..."

2. Grazing: The following excerpts (pages 63-65) from the Grizzly Bear Compendium (National Wildlife Federation, 1987) discuss the effects of grazing on grizzly bears.

> "**Types of Impacts/Relationships**
>
> Impacts to grizzly bears from agricultural and livestock could be categorized into 5 classes:
>
> 1. Direct loss: mortality or loss of grizzly bears through control actions, relocations and illegal kills associated with livestock allotments, ranching or farming operations.
> 2. Indirect loss: habituation of grizzly bears to human activity following attraction to livestock, livestock carrion, crops, etc., predisposing them to nuisance behavior elsewhere.
> 3. Habitat loss or modification due to grazing or other agricultural activity.
> 4. Displacement (temporally or spatially) away from agricultural activity.
> 5. Direct competition with livestock for preferred forage species...
>
> **Livestock-Related Impacts**
>
> Thier and Sizemore (1981) analyzed grizzly bear relocation data from the Northern Continental Divide Ecosystem (NCDE) from 1975-80. They found that livestock depredation was significantly the most common offense for which a bear was relocated. Furthermore, these relocations were significantly less "successful" (i.e., success being no return and no further conflict) than relocations after other offenses. Mace et al. (in prep) also analyzed grizzly bear relocations in the Northern Continental Divide Ecosystem and found that 44% of the relocations resulted directly from livestock depredations. Knight and Judd 1983) calculated that, dependent on which mortality and population estimates they employed, from 1.5% to 20% of the entire Yellowstone Grizzly Bear Ecosystem (YGBE) grizzly bear population may have been lost due to livestock conflicts in 1976-77. Lee and Weaver (1981) estimated that 10% of the YGBE population may have been lost due to livestock related conflict on the Targhee National Forest alone during 1960-1979. However, Burns (1986) noted that the pre-1980 livestock related grizzly mortality statistics were based largely on grazing reports filed annually by grazing permittees and may not have accurately portrayed the actual losses. He reported only 1 grizzly bear mortality on a Targhee National Forest grazing allotment for the 1980-84 period.
>
> Knight et al. (1985) reported that depredations (livestock and property) were the leading cause of nonhunting mortality in the NCDE from 1975 to 1984. Eighty-nine percent of these mortalities

specifically involved sheep depredations, Aune and Stivers (1983) reported that from 1977-1982, 5 grizzly bears on their Rocky Mountain East Front study area were known to prey on sheep; all 5 were subsequently killed.

Unreported grizzly bear mortality related to livestock operations may be a significant part of the overall mortality. Jorgensen (1979) reported that only 41% and 17% of known bear kills in 1976 and 1977, respectively, were ever reported. Griffel (1978) likewise found that some herders were either incommunicative or provided erroneous information concerning depredations. Knight and Judd (1983) noted that the grizzly's threatened status under the Endangered Species Act may have contributed to this problem. Stockmen, cognizant of the stiff penalties for poaching a grizzly and dissatisfied with the preferred policy to relocate rather than dispatch a depredating bear (Anonymous 1979, USFS 1985e), may be more reluctant to report depredation conflicts than before listing. Other stockmen may be inclined to inflate the extent of their depredation loss although loss due to other factors, such as poor herding practices, may greatly exceed predator loss (Griffel 1982).

One critical question is whether or not some bears can peacefully coexist with livestock without serious depredation conflicts. Traditionally, many stockmen felt that all bears were livestock-killers and should be eliminated from grazing allotments and ranches (Griffel 1978, Schallenberger and Jonkel 1980). Knight and Judd (1983) reported that all instrumented bears (except 1 orphaned cub) that came into contact with sheep killed them. However, Claar et al. (in press) found that only 2 of 20 marked grizzly bears in the Mission Mountains (NCDE) were involved in sheep depredations although almost all were in proximity to livestock during spring and fall. Several investigations observed that depredation behavior was apparently a learned process (Johnson and Griffel 1982, Jorgensen 1983, Knight and Judd 1983). This may account for some of the regional differences in depredation as might the previous level of control (Johnson and Griffel 1982)...

Most livestock depredation incidents in the contiguous United States involve sheep, although some grizzlies will prey on cattle (Lee and Weaver 1981, Knight and Judd 1983)... Knight and Judd (1983) noted that all 4 grizzlies which killed adult cattle in their study were adult males, although 2 sows did prey on calves. Cattle depredation may also be less detectable than sheep depredation because cattle are not generally herded as closely as sheep nor are they checked as frequently (Knight and Judd 1983). Grizzlies also feed on livestock carcasses either scattered on rangeland or dropped in "boneyards" by ranchers (Servheen et al. 1981, Aune and Stivers 1983). Claar et al. (in press) suggested that historically the grizzly/human relationship was partially symbiotic as bears ate livestock carrion and ranchers benefitted from carcass removal. In the NCDE, bear use of boneyards is greatest in spring and many provide a valuable food resource when other foods are scarce prior to spring green-up (Schallenberger and Jonkel 1980, Servheen 1981). There is disagreement in the literature concerning whether or not grizzly use of livestock carrion may lead to active depredation of livestock animals. It is generally accepted, however, that improperly situated boneyards may function much like garbage dumps and attract grizzlies to areas near human habitation where they are increasingly vulnerable (Schallenberger and Jonkel 1980, Servheen et al. 1981, Aune and Stivers 1983).

Direct competition for forage between grizzlies and livestock was discussed in a number of reports. Jorgensen (1979, 1983) developed a "competition index" to identify food plants for which bears and sheep might compete. Twenty-four of the 31 plant groups she examined had a "potential" for competition (i.e., both bears and sheep consumed the plant). Competition was likely to be greatest in the spring when succulent, palatable vegetation was least available and concentrated in particular areas. Most of Jorgensen's data pertained to black bears, however, and she noted that sheep competition with grizzlies would probably be less than sheep competition with black bears (Jorgensen 1979).

Schallenberger (1976) noted that cattle appeared to compete directly with grizzly bears for forage on more mesic sites. Competition with sheep for certain forb and shrub species was also possible, particularly if the sheep were loosely herded and allowed to concentrate on moist areas. Based on U.S. Forest Service ratings of desirable range plants, he listed forage species for which grizzlies and livestock might compete. He did not provide quantitative data on livestock forage items.

Summerfield (1978) felt that there was little competition for food between grizzly bears and cattle in part of the Idaho Panhandle National Forest. He attributed this to spatial and temporal segregation and the grizzlies broad food base. He also reported that competition for cover was unlikely. Davis (1986) reported that most herbaceous grizzly bear foods were also listed as forage plants for domestic livestock (taken from U.S. Forest Service data).

Perhaps the most extensive analysis of grizzly bear-livestock forage competition was undertaken by Aune for the Rocky Mountain East Front area in northern Montana (Aune and Stivers 1983, 1985, Aune et al. 1984). Aune et al. (1984) found that over 50% of 1379 grizzly bear radio locations occurred on areas where the predominant land use was livestock grazing. Aune (1985) compared the food habits and habitat use of grizzly bears and cattle along the Rocky Mountain East Front. He found that 2 species commonly shared 6 habitat components with the riparian component being used most commonly by both. A food habits comparison (using fecal analysis) showed some degree of overlap in the diets of cattle and grizzly bears. A use:availability analysis of 3 preferred habitat components of grizzly bears showed no significant difference in the use of grazed versus ungrazed components. However, Aune noted that numerous years trampling and overgrazing in riparian areas actually reduced the diversity of plant species and increased the

> abundance of low-palatability species. Cattle browsing on aspen suckers potentially threatened the aspen community on his study area and caused a subsequent loss of the palatable forb understory.
>
> Lee and Jonkel (1980) reported that intensive livestock grazing, primarily cattle, had induced significant modification of the riparian vegetation within portions of the Pine and Antelope Butte wetlands (NCDE). Soil compaction by livestock had resulted in predestaling and puddling in some areas. They also noted that major shifts in species composition of trampled areas (fewer succulent forbs and perennial graminoids) could render the wetlands less desirable as bear habitat. Other researchers have also commented on the effects of livestock trampling (Schallenberger 1976, Aune and Stivers 1983, Jorgensen 1983)..."

3. Logging: The following excerpts (pages 137 and 144) from the Grizzly Bear Compendium (National Wildlife Federation, 1987) discuss the effects of timber harvesting on grizzly bears (effects of roads associated with timber harvesting is discussed under "roads"):

> "While many studies document reduced grizzly bear use of logged areas (Perensovich 1966, Russell 1974, Lyon and Basile 1980, Mace and Jonkel 1980b, Zager et al. 1983), others report no evidence that logging impacts grizzlies (Meehan 1974, Zager 1980a). Aerial surveys over a 6 year period in the northwestern U.S. and southern Canada showed no changes in grizzly bear populations and little reduction in the number of cubs produced per year as logging pressure increased, however, bear home ranges were substantially reduced during this period (Mace and Jonkel 1980b). These conflicting results suggest that while bear numbers may not be immediately affected by logging activities, their behavior is almost certainly modified...
>
> Alternations in timber cover can affect the quality of grizzly bear food and cover (Blanchard 1983, USFS 1985a) causing bears to change their use of an area. Grizzly habitat can be affected by timber harvesting in 3 ways:
>
> - vegetation arrangement and abundance can be changed affecting the quality and quantity of food and cover (Ruediger and Mealey 1978, Sigman 1985, USFS 1985i).
> - human use patterns may be altered (Ruediger and Mealey 1978, USFS 1985i). Logging practices make grizzly habitat much more accessible to man (Craighead 1980).
> - existing water regimes may be indirectly impacted; surface and/or subsurface water movement and/or distribution may be changed (Archibald 1983, Ruediger and Mealey 1978). Logging in carex meadows substantially alters water levels by increasing runoff and blockage of water by slash (Russell 1974).

> Nevertheless changes in vegetation can be predicted and timber management coordinated to benefit grizzlies and their habitat (Ruediger and Mealey 1978, Servheen et al. 1981, USFS 1985a); vegetation changes can, in some cases, actually enhance grizzly bear habitat (USFS 1983b, 1985aci, 1986, Holland 1986) and the impacts of human disturbance can be mitigated by temporal constraints, shortened contract periods, providing displacement areas and managing access (USFS 1985a). The U.S. Forest Service and National Park Services presently evaluate all logging activities for their potential impact on grizzly bears (Mealey 1979, 1986, USFS 1983b, 1985ab) and permit no activities which adversely affect grizzlies (Mealey 1979, 1986, USFS 1983b)...
>
> Management of habitat for grizzly use should be designed to provide food (fruits, succulent herbs, grasses and sedges), cover (thermal and hiding) and living space (home range) (Ruediger and Mealey 1978, Contreras 1983).
>
> Timber harvesting practices which can be manipulated to provide the above are timing, location and type of cut (size, shape, species); use of buffer zones or leave strips and post-harvest treatments (slash disposal, revegetation)...
>
> Sites can be regenerated either naturally (by using natural silvicultural methods such as seedtree, selection cuts, etc.) or artificially either by seeding or planting (Eggers 1986). Within 5 years of logging, production of bear foods should increase (Meehan 1974). Moist sitka spruce, cedar/hemlock and spruce/fir sites may produce adequate food and cover within 10 years of harvest while recovery on drier sites (douglas fir and ponderosa pine) may be much slower (Zager 1983). Recovery will also be retarded where soil scarification has occurred and may take up to 25 years on heavily scarified soils (Zager 1983)...
>
> Changes in human use of a logged area may be even more detrimental to grizzly bears than actual alterations in vegetation. Logging operations greatly increase access to, and therefore human use of, an area which may lead to increased grizzly/human interactions (Chadwick 1974, Meehan 1974, Russell 1974, Erickson 1976, Craighead 1980, Archibald 1983, Horejsi 1986). Activity in grizzly habitat can be changed by modifying road management plans and carefully following guidelines for camps..."

4. Roads: The following excerpts (pages 69-71) from the Grizzly Bear Compendium (National Wildlife Federation, 1987) discuss the effects of roads on grizzly bears:

   > "Problems associated with roads and increased road densities have had a major influence on grizzly bear populations and habitat use patterns in numerous, widespread areas (Tracy 1977, Elgmark 1978a, Schallenberger and Jonkel 1980, Jonkel et al. 1981, Brannon 1985). Lyon and Basile (1980) and Lyon (1984) discussed the general nature of road impacts on wildlife with particular reference to grizzly bears and ungulates. These impacts include lethal encounters,

habitat modification and various stress-related behavioral adaptations. Listed below are several types of impacts.

1. Increased access for humans into grizzly bear habitat. Consequences may include increased use of adjacent backcountry areas, settlement, introduction of artificial foods and attractants and additional mortality factors.

2. Use of roads, especially secondary roads, as grizzly bear travel corridors into developed areas.

3. Direct mortality from roadkills, legal and illegal harvest and other factors resulting from increased human-bear encounters.

4. Avoidance/displacement of grizzly bears away from roads and road activity.

5. Changes in grizzly bear behavior, especially habituation, due to ongoing contact with roads and road activity.

6. Habitat loss or modification due to roads and road construction, including vegetative and topographic disturbances.

Mortality From Roads

The most direct form of road-related mortality involves grizzly bears killed by vehicles (Knight et al. 1981, 1986, Greer 1985, Palmiacano 1986, Burns 1986). However, most researcher have concluded that the effects of increased human access into bear habitat, particularly increased vulnerability to legal and illegal harvest, constitute the most critical impacts of road activity on the grizzly bear (Nagy and Russell 1978, Ruediger and Mealy 1978, Smith 1978, Schallenberger 1980, Zager 1980ab, McLellan and Mace 1985). McLellan and Mace (1985) found in their southeastern British Columbia study area, that a disproportionate number of grizzly bear mortalities occurred near roads. Of 11 known mortalities, 7 bears were definitely shot and 2 others may have been poached from roads. Dood et al. (1985) analyzed all Montana grizzly bear mortality data with known locations and found that 32% of all hunting mortality and 48% of all non-hunting mortality occurred within 1.0 mile of a road (n=170 and 258, respectively).

Avoidance/Displacement by Roads

Much of the literature on road impacts concerns avoidance/displacement of grizzlies from roads. Lloyd and Fleet (1977) found that in southeastern British Columbia, grizzly bears avoided areas within 0.5 miles of roads. Along the Rocky Mountain East Front, grizzly bear observations near heavily travelled roads, including those which paralleled riparian areas, were markedly absent (Schallenberger and Jonkel 1980). Analysis of 408 radio relocations and 973 other grizzly observations showed that the mean distance to automobile roads and 4-wheel drive roads was 3.4 and 6.2 km, respectively. In a poor food year, these distances decreased suggesting that grizzlies compromised security factors when stressed by food shortages.

Aune et al. (1984) also studied the influence of roads on grizzly bear distribution in the Rocky Mountain East Front. They partitioned their relocation data (n=1379 relocations) into 500 m distance zones from the nearest road (e.g., 0-499 m, 500-999 m). The analysis indicated that in all 3 seasons, the zone nearest a road accounted for more relocations than any outlying zone. These results were potentially biased by the easy researcher access along the roads (leading to a disproportionate number of relocations collected from the roads), the high density of roads throughout the study area and the presence of habituated bears. The researchers observed that grizzlies whose home range included large tracts of wilderness were found within 1 km of roads only 29.3% of the time, whereas, bears whose home range lay in more heavily roaded areas were relocated within 1 km of a road 64% of the time.

Zager (1980ab) and Zager et al. (1983) evaluated grizzly use of habitat in logged and roaded areas in northeastern Montana. No overall avoidance of roads was evident in their analysis but this may have been a result of the high density of roads throughout their study area. They observed that logged areas were more likely to be used when located along secondary and closed roads than when located along primary roads. Females and females with cubs avoided habitat within 200 m of roads, whereas, males appeared to prefer habitat adjacent to roads. Zager (1980ab) attributed the latter result to extensive travelling by males.

Another study conducted in the Cabinet Mountains of northeastern Montana (Kasworm 1985) showed that the mean distance of grizzly bear relocations from open roads (2467 m) was significantly greater than the mean distance to closed roads (740 m; p<.001).

Three studies included use/availability analysis to evaluate the impacts of roads on grizzly bears. In southeastern British Columbia, grizzly bears used the area within 100 m of a road an average of 40% of the expected value in spring and 50% of the expected value in summer/fall (McLellan and Mace 1985). Beyond 100 m the displacement effect was minimal or absent. No differences were detected between the effects of primary, secondary and tertiary roads. Based on the total proportion of the study area which lay within 100 m of a road, the researchers calculated that 8.5% of the total area was "lost" to bears as a consequence of road avoidance.

Aune and Stivers (1985) performed a similar use/availability analysis for 385 grizzly bear relocations from the Pine Butte Preserve (NCDE). Bears were relocated within 500 m of an open road far less than expected. The number of relocations from 500-1000 m was about equal to the expected value and the number of relocations beyond 1000 m exceeded the expected value. The apparent avoidance of roads within 0-500 m was especially noteworthy because 59.9% of the total area of the 3 most preferred habitat components occurred within this zone and most of the relocation data were from road-habituated bears. The type of road was also important. Grizzly bear observations on jeep and field roads were common while use of primary roads was rare except when artificial attractants were available.

Brannon (1984) found that in Yellowstone National Park, grizzly bears avoided areas within 50 m of a road and used the area between 3.0 and 4.5 km more than expected. Computer-generated random points were compared to the distribution of bear relocations. ANOVA tests indicated that bear observations occurred at significantly greater distances than random grid points from most "zones of influence" (distance zones from roads).

Mattson et al. (in press) also analyzed the effects of roads on grizzly bear distribution and habitat use in Yellowstone National Park. They found that primary roads and developments were situated in the most productive grizzly bear habitat in the Park. On a "micro" analysis scale (0-1500m), primary roads depressed bear use up to 600 m in the spring. The effect was somewhat less in the summer and absent in the fall. On a "macro" scale (0-15 km) deviation of observed from expected levels of bear use in zones paralleling roads was significant for all seasons, however, the pattern of this deviation varied markedly by season. Individual classes of bears were impacted differently by road presence. Subadult bears were disproportionately represented adjacent to roads, apparently displaced out of more secure zones by dominant bears. Habitat use patterns were also affected. Whereas grizzlies tended to occupy the most productive habitat in areas beyond the conceivable influence of roads, productivity of habitat occupied by grizzlies in zones proximal to roads was depressed below the average for the zones. Grizzly bear foraging strategies were disrupted out to approximately 2-5 km in spring and summer and out to 4 km during fall...

In addition to general avoidance, roads may sometimes influence normal movement patters... Jonkel et al. (1981) noted that interference with natural movements, especially along bear travel corridors, was a major impact of roads and highways in northern Montana. Some bears may utilize secondary roads as travel routes, especially when off-road travel is impeded by slash of thick vegetation (Smith 1978). Movements along secondary or closed roads can potentially lead grizzlies into developed areas and increase the chances of undesirable bear-human encounters (Ruediger and Mealey 1978).

Displacement of grizzly bears by road activity can be temporal as well as spatial. McLellan and Mace (1985) found that although there was no significant difference between day and night distances of bear relocations from roads, bears were found directly on roads more frequently at night (9.8% of 41 relocations) than during the day (0.6% of 1050 relocations). Zager (1980ab) in northwestern Montana and Aune and Stivers (1985) in the Rocky Mountain East Front also found increased use of secondary roads at night.

Factors Affecting Grizzly Bear Responses to Roads

A number of factors may influence individual bear's reaction to roads and road activity. These factors include age/sex class of the bear, type of area (remote vs. accessible), individual habituation to road-related stimuli, nature of the stimuli and character of the habitat adjacent to the road. Some segments of the population may be influenced by the presence of roads more than others. Zager (1980ab) felt that avoidance of roads by females with cubs was a major concern... Aune et al. (1984) found that subadult bears were displaced further away from roads than adults...

The character of the habitat adjacent to roads may influence grizzly bear reactions to road stimuli. McLellan and Mace (1985) observed that bears in direct view of vehicles generally fled but bears close to roads but yet in some protective cover were not affected. In northwestern Montana, grizzly bear use of logged areas adjacent to roads was largely dependent on the availability of cover including a well-developed shrub strata, leave trees and an undulating boundary for the logged area (Zager 1980ab). Conversely, grizzly bears in Denali National Park appeared to feel less secure when their view of the road was obscured by vegetation (Singer and Beattie in press).

Habitat Modification Effects of Roads

Vegetative disturbances associated with road construction have received less attention in the literature than the avoidance issue. Zager (1980ab) and Jonkel et al. (1981) noted that road building could disrupt ground and surface water hydrology. Reseeding to present erosion may result in a substantial increase in forage (Nagy and Russell 1978, Ruediger and Mealy 1978. In Denali National Park, snow removal, road dust and modified drainage patterns along roads cause roadside vegetation to green-up somewhat before other areas. Hastened phenology of several favored forage species attracts grizzlies to road areas in late spring (Tracy 1977). Unfortunately, any advantages accrued from the additional foraging opportunities along roads are likely to be outweighed by the undesirable increase in bear-human encounters..."

Summation

The above discussions, excerpted from the Grizzly Bear Compendium, demonstrate that recreation, grazing, logging, and roading may impact the grizzly bear in the following ways:

1. Increased mortality, both directly and indirectly;

2. Loss of habitat through activities that adversely modify or destroy important habitat components;

3. Loss of habitat through displacement of animals;

4. Improved habitat by increasing bear foods and improving the juxtaposition of foraging and cover components; and

5. The effects of past and present impacts of all Federal, State, and private actions.

The scientific literature indicates that the degree of impact to the grizzly bear largely depends upon how, where, when, and at what level these activities are carried out in grizzly bear habitat. Based upon the scientific literature, the Service, in its biological judgement, concludes that clearcutting per se is not likely to jeopardize the grizzly bear if implemented with consideration for:

1. size and shape of cutting units;

2. their relation to past cutting units that have not regenerated to the point of providing hiding cover;

3. their relation to non-forested components such as avalanche chutes, wet meadows and side hill parks that provide bear food;

4. the degree of scarification;

5. their relation to mesic sites and riparian habitat; and

6. adequate leave strips between cutting units and between roads and cutting units to provide for security and movement.

Likewise, based upon the scientific literature, the impacts of roads per se, in the biological judgement of the Service, are not likely to jeopardize the grizzly bear if roads are managed with consideration for the following:

1. obliterating the road and revegetating the road bed after logging;

2. closing roads on a seasonal or year-long basis to provide security and maintain habitat effectiveness;

3. avoiding loop roads in planning transportation systems; and

4. designing roads to avoid impacting important habitat components.

Using the scientific literature, standards and guidelines were developed (Appendix C) to coordinate Forest activities with the biological needs of the grizzly bear. The guidelines were specifically developed to minimize and/or eliminate: (1) increased mortality risk, (2) loss of habitat, and (3) additive effects. While the Forest Plan projects an annual harvest of 100 MMBF on 66,000 acres over the first decade and 500 miles of roads constructed in association with the timber harvest, these outputs may not be achieved due to the constants of the grizzly bear standards and guidelines (reference Appendix E). Even though 500 miles of road may be built to remove timber, the number of miles of roads open to public travel will be restricted to meet the open road density standards for grizzly bear management situations I and II (≤1 mile/square mile in MS-I and ≤2 miles/square mile in MS-II). Roads will be closed using physical barriers such as kelly bumps, boulders, slash, gates, etc and monitored to determine the effectiveness of the closures. A road is considered closed when it is not reasonably drivable by a conventional vehicle due to natural obstructions or when a physical or enforceable administrative restriction or both is employed and managed such that motorized vehicle use level does not exceed 5 vehicles per week during the restriction period. When administrative activities or a project, such as a timber sale, significantly changes the objectives of the open road density, a site specific analysis of travel impacts will be made and appropriate mitigating measures established. The open road densities will be calculated as the Forest Plan is implemented on an analysis area of 5,000 to 15,000 acres so that the true impacts from roads are not "masked" or "washed out" as could happen if the densities were calculated using larger size analysis areas.

In developing the Forest Plan grizzly bear standards and guidelines, the best scientific and commercial data available was used, as well as the professional judgments of biologists from the Forest Service, Fish and Wildlife Service, and the Montana Department of Fish, Wildlife and Parks. The 1985 formal consultation on the Flathead National Forest Plan resulted in a grizzly bear management framework and associated guidelines being incorporated into the Forest Plan. The Forest Plan was subsequently amended to include the Interagency Grizzly Bear Guidelines in their entirety. Formal consultation on the guidelines in 1979, concluded that their implementation would promote the conservation of the grizzly bear. The Service therefore believes that if both the Forest Plan standards and guidelines are consistently adhered to, the Forest Plan is not likely to adversely affect the grizzly bear. (Standards are not directionary. They apply to all National Forest System Lands and will be followed unless the standards are amended (Flathead National Forest Plan Amendment No. 8). Guidelines are not binding but must be considered in all cases.) The Service recognizes, however, that there may be occasions where departure from the guidelines may occur resulting in adverse impacts to the grizzly bear requiring formal consultation. Thus, the no jeopardy conclusions reached in the 1985 and 1989 biological opinions on the Forest Plan and Plan Amendments are therefore unchanged by this amendment.

B. GRAY WOLF

In addition to wolves having a relatively high reproductive rate, they are extremely mobile and have large territories. Keith (1982) indicated that rates of increase in wolf populations are primarily determined by per capita ungulate biomass, and that wolf densities in stationary populations adjust to total ungulate biomass. In reviewing the literature on population dynamics of wolves, Keith (1982) compared reported exploitation rates with resulting numerical trends from 13 different wolf populations. He reported that wolf reproduction and/or pup survival can apparently offset rates of exploitation up to 30%. However, if human-caused mortality rates are greater than 30%, wolf numbers may decline.

It is well documented that wolves will avoid areas with high levels of human use. There is little evidence that human activity other than direct killing has caused wolf mortality. While wolves appear most sensitive to human disturbance near den sites, there is little evidence to suggest such disturbance will cause reproductive failure. In view of this information, the Service believes that displacement/disturbance of wolves created by Forest Plan activities (recreation, logging, roading), except for those that may impact whelping dens and initial rendezvous sites, have little or no demographic effects. Most wolf packs appear particularly sensitive to human disturbance near den sites and may abandon the den (Joslin 1967, Carbyn 1974a, Chapman 1979). Most active wolf dens are located at least 1 mile from recreation trails and 1 to 2 miles from backcountry campsites (Carbyn 1974, Peterson 1977, Chapman 1979). To ensure that wolves are not disturbed at den sites and initial rendezvous sites resulting in pup mortality, the Forest Plan contains the guideline that recommends no logging activities within a one-mile radius of these sites during the period March 15 to July 1.

The biological opinions issued on the Forest Plan and the Forest Plan Amendments recognize two major factors in managing for wolf recovery in Montana: (1) maintaining an adequate year-round prey base and (2) preventing illegal human-caused mortality.

Ungulate abundance and their sex and age composition on the Flathead National Forest will largely be determined by logging practices, road management (i.e., open road densities), winter range management prescriptions and the Montana Department of Fish, Wildlife and Parks hunter harvest strategies. Winter range forage is generally believed to be the factor limiting elk, mule deer and white-tailed deer population growth (Forest Plan, page VI-11). Winter range forage production outside wildernesses will be increased through timber harvest carefully designed and scheduled to increase forage production while retaining the desired relationship of tree cover to available forage. Prescribed burning of winter ranges will also be used to enhance winter range capacity.

To coordinate timber harvesting with elk, selected recommendations from "Coordinating Elk and Timber Management, Final Report of the Montana Cooperative Elk-Logging Study, 1970-1985" will be used (Forest Plan, page II-22). The Forest Plan requires that over 95% of the potential suitable elk and mule deer and about 75% of the potentially suitable white-tailed deer winter ranges be managed to achieve desired cover/forage relationships and maximum forage production. By the fifth decade (2035), the Forest Plan projects that the Forest could support 7,800 animals on elk and mule deer winter range, an increase of 1,872 animals from current estimates. White-tailed deer winter ranges could support 1,734 animals — an increase of 561 animals from current estimates. Thus, the Forest Plan's direction and management results in a gradual increase in the ungulate biomass available to wolves.

Illegal human-caused mortality can be minimized by promoting public acceptance [illegible] the wolf and providing adequate security. Public acceptance can be facilitated by (1) interpreting the ecology and management of wolves to the public, (2) restricting other land uses only when absolutely warranted, and (3) being responsive to landowners and Forest permittees when wolf conflicts occur.

Livestock grazing has the potential to indirectly affect the wolf should permittees exercise their own wolf control. Grazing under the Forest Plan is programmed to remain at the level existing today (Forest Plan, page II-13). Based on the low rates of livestock depredation in areas where there are established wolf populations (Bjorge and Gunson 1982, Fritts 1982, Gunson 1982, Tompa 1982) and the availability of ungulate biomass on the Flathead National Forest, the level of wolf/livestock conflicts is expected to continue to be low. However, in order to address potential wolf/livestock conflicts, and to be responsive to problems should they occur, the Service has developed and approved the Interim Wolf Control Plan - Northern Rocky Mountain of Montana and Wyoming (U.S. Fish and Wildlife Service 1988).

Implementation of the control program outlined in the Interim Wolf Control Plan will serve to enhance the overall survival of the wolf by demonstrating that responsible Federal agencies will act quickly to resolve depredation problems. Timely response to depredations will alleviate the perception of government inaction that often results in increased permittee/landowner frustration, which, in turn, may lead to the indiscriminate killing of wolves. Removal of problem animals does more than stop depredation, it relieves the pressures or antagonisms directed toward the species by the permittee/landowner(s) incurring the losses. Consequently, the local (wolf) population is in less danger from potential nonselective (illegal) attempts at damage control when a proactive Federal program is viable.

Roads associated with timber harvesting can reduce habitat security and increase the potential for illegal mortality. Distribution of the wolf in parts of Wisconsin (Thiel 1985) and Michigan and Ontario (Jensen et al. 1986) has been related to the density of roads passible by two-wheel drive vehicles. Wolves in those regions generally do not occur where road densities exceed 0.93 miles per square mile, whereas similar areas nearby with fewer roads do contain wolves.

In a small segment of the wolf range in Minnesota, wolves did not have territories where roads exceeded a density of 1.18 miles per square mile (T.K. Fuller, Minnesota Department of Natural Resource, unpublished data). In another small area of Minnesota with 1.18 miles of roads per square mile, greater than 50% of known wolf mortality was caused by humans despite prohibitions of the Endangered Species Act. Wolves survived there probably because the area was surrounded by an extensive wilderness reservoir (L.D. Mech, unpublished data).

The northwest Montana wolf recovery area generally coincides with the Northern Continental Divide grizzly bear ecosystem. Management Situation 1 (MS-1) grizzly bear habitat on the Flathead National Forest includes almost all of the wolf habitat identified on the Flathead National Forest. Thus, by meeting grizzly bear open road density standards in the Forest Plan, as amended (≤1 mile/square mile in MS-I and ≤2 miles/square mile in MS-2), the security needs for the wolf are also being addressed.

The 1985 formal consultation on the Flathead National Forest Plan resulted in a gray wolf management framework and associated guidelines being incorporated into the Forest Plan. Thus, the Forest Plan provides the direction, guidance and insurance that forest activities, when planned and implemented at the project level, will be coordinated with the biological requirements of the wolf. The no jeopardy conclusions reached in the 1985 and 1989 biological opinions on the Forest Plan and Plan Amendments are therefore unchanged by this amendment.

C. BALD EAGLE

Despite the encouraging increase in nesting populations, human-caused mortality of bald eagles continues to occur in Montana. Factors include shooting, accidental trapping, electrocution, powerline collisions, and poisoning. Poisons as a source of mortality have decreased in recent decades. DDT and its metabolites have also decreased in Montana in the last 10 years. The combination of reduced mortality, protection of important habitats and good reproductive success are the basis for current population growth. However, habitat alterations continue to occur in some areas. This trend will undoubtedly continue reducing the availability of suitable habitat for bald eagles in Montana. The primary sources of habitat loss or degradation are river impoundment, logging, subdivisions, and human recreation (Montana Bald Eagle Management Plan, 1986).

The Forest Plan, as amended, identifies numerous actions which have the potential to effect bald eagles. Specifically, recreation, logging, and road management and their associated activities can adversely effect bald eagles through (1) degradation and loss of suitable habitat, or (2) result in temporal removal of additional habitat by eliminating nesting, foraging or roosting opportunities.

In 1986 the Montana Bald Eagle Working Group developed a Montana Bald Eagle Management Plan (Management Plan). The Management Plan is intended to be an extension of the Pacific States Bald Eagle Recovery Plan (Recovery Plan) in that it identifies potential problems for the Montana population and steps down (localizes) management recommendations that are in only general form in the Recovery Plan. The Management Plan identifies management objectives and guidelines for both occupied and potential nesting habitat, as well as winter/migration habitat. Goals and guidelines for monitoring bald eagle populations, reducing mortality and promoting the conservation of the species are clearly identified and set forth in the Plan. Specific management recommendations and guidance are also included in the Management Plan which adequately addresses potential and cumulative effect of actions identified in the Forest Plan.

The Flathead National Forest, through amendment number 13, adds the following standards to; Threatened and Endangered Species - Bald Eagle:

"e. Bald eagle habitat components (winter roosts, feeding areas and spring/ fall migration routes) will be inventoried and recorded along with nests as part of the site-specific analysis.

f. The Montana Bald Eagle Management Plan and the Pacific Bald Eagle Recovery Plan provide additional direction and guidelines which will be applied during site-specific analysis. These documents are incorporated into the Land Resource Management Plan (LRMP) as unbound appendices (Appendix QQ, Montana Bald Eagle Management Plan, 1986 and Appendix RR, Pacific Bald Eagle Recovery Plan, 1987)."

Inclusion and commitment to comply with the above mentioned documents and actual implementation of the Management Plan will (1) prevent habitat degradation and loss, and (2) provide adequate nesting, foraging, and roosting opportunities. Pro-active management to identify and inventory bald eagle habitat components and to protect their integrity as Forest Plan activities are implemented will benefit the eagle.

The Service therefore amends the "is not likely to jeopardize" conclusion reached in our 1985 biological opinion and concludes that: (1) the Forest Plan, as amended, is not likely to adversely affect the bald eagle and that (2) the Forest Plan, as amended, provides the necessary management guidance and direction to contribute to the recovery of the bald eagle at a beneficial level.

D. PEREGRINE FALCON

The decline of nesting peregrine falcons in the Rocky Mountain/ southwest region has been linked to the presence of DDT and its metabolites, especially DDE, in egg contents (Enderson and Craig 1974). Many additional mortality factors have been described in the literature, however few have any relationship to actions described in the Flathead National Forest Plan.

The primary concern from the effects of actions described in the Forest Plan, should peregrine falcons occur on the Forest, are human disturbance at or near nest sites, foraging areas or migrant use areas. Adequate buffer zones for protecting peregrine falcons are outlined in the Forest Plan.

Because no known nest sites or migrant use areas are identified for the Forest, the Forest Plan should not adversely affect the peregrine falcon (see Conservation Recommendations for additional information on the peregrine falcon). Should peregrines reestablish themselves on the Flathead National Forest, either naturally or through hacking programs, the Conservation Recommendations in this opinion, if accepted,will help facilitate their recovery. The Service therefore amends the "is not likely to jeopardize" conclusion reached in our 1985 biological opinion and concludes that the Forest Plan, as amended, is not likely to adversely affect the peregrine falcon.

Conservation Recommendations and Clarification of Recommendations in the 1985 Biological Opinion: Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "Conservation Recommendations" has been defined as suggestions of the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.14(j)).

Conservation Recommendations - Peregrine Falcon

1. Add as an unbound appendix to the Forest Plan the American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations) 1984. This document provides additional direction and guidelines which should be applied during site-specific analysis.

2. Considerable effort by many cooperators in Montana has been placed on releasing peregrine falcons in this region, but only limited time has been spent monitoring returning peregrine falcons, determining productivity and identifying future hack site locations. Region 1 of the Forest Service has provided substantial support on the release program in southwest Montana. As breeding peregrine falcons begin occupying sites in southwestern Montana, release efforts will begin to shift north into the Flathead area. Habitat surveys should be conducted on the Forest for peregrine falcons. Habitat surveys directed at cliff suitability, prey availability and ecological data gathered around cliff sites will assist in detection of active eyries and in delineation of other important habitats and possible reintroduction areas that then can be protected by following the direction and guidelines in the Recovery Plan.

Clarification of 1985 Recommendations - Grizzly Bear

In our 1985 biological opinion we provided recommendations regarding duration of timber sale activity and reentry schedules. The purpose for providing criteria for duration of activity and timing of reentry was to:

1. assist in scheduling timber sales and setting timber volume targets in the Forest Plan's 10-Year Timber Sale Schedule so that timber volume targets could realistically be met while remaining in compliance with grizzly bear guidelines; and

2. provide a clear interpretation of the Forest Plan grizzly bear/timber management guidelines numbers 2 and 5 (Forest Plan, Page II-31), which state "strive to concentrate activities within the shortest time period" and "sales should be planned so that repeated entries over short periods are avoided".

3. Ensure an adequate level of habitat security throughout the ecosystem within which bears can meet all their biological requirements.

Since the Forest Plan has been approved, there has been some confusion by Forest staff regarding the intent of these recommendations and their application during Forest Plan implementation. In addition to the above stated three purposes, the intent of the criteria for activity duration and reentry is to: (1) provide an adequate level of habitat across the ecosystem that is left undisturbed and available to bears (i.e., security), (2) maintain habitat suitability within second and third order drainages and (3) to ensure continued long-term use of them by grizzly bears, particularly with respect to females. Security has not been defined for grizzly bears, as it has been for elk (i.e., freedom from human disturbance). Most elk studies indicate that full utilization of available elk habitat does not occur where security is inadequate. Research has shown that in some cases, grizzly bears and elk react similarly to logging. If we assume that grizzly bear needs are similar to elk, then security measures most often used in elk management would seem to be appropriate. Security has been recognized as a requirement of elk during the period of active logging in a timber sale. However, additional research has made it clear that security is a continuing requirement in all elk habitats, whether logging is in progress or not. More important, security has been recognized as a requirement which is not necessarily satisfied simply because hiding cover is maintained at a minimum level of 40%. In many situations, space may be as important as hiding cover in establishing security values.

Research by Mace and Jonkel (1980B) showed that grizzlies were displaced from a drainage during the period that logging was occurring in it. If timber harvesting occurs in a drainage for extended periods of time, historical bear use of the area may be lost, particularly to females. Aune et al. (in press) and McLellan (personal communication 1989) showed that female cubs generally establish their home range within or have a significant overlap with their mother's home range, while males generally disperse from their mother's home range. Long-term displacement of a female from a portion of her home range may result in that area being lost to female bears since her offspring have no chance to learn the foraging opportunities in areas no longer used.

One of the parameters being considered by the Service to document recovery in the Northern Continental Divide ecosystem is the distribution of females with young throughout the ecosystem. The criteria for activity duration and reentry, if applied, will help ensure that habitat is managed in a manner so that this parameter can be met and maintained.

The scheduling for activity duration and reentry frequency, calculating open road densities and cover requirements should be done on an analysis area of approximately 5,000 to 15,000 acres in order to meet the intent of maintaining suitable bear habitat throughout the ecosystem.

Incidental Take

The regulations that govern the Section 7 consultation process published in the Federal Register of June 3, 1986, address incidental take of listed species that may occur as a result of implementing an action (50 CFR S402.14(i)). Section 9 of the Act makes it unlawful for any person to "take" an endangered species. As defined by the Act, the term "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" 10 U.S. C. 1532 (19). Further, "harm" is defined to include "an act... [that] may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering" (50 CFR 17.3). However, under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered taking within the bounds of the Act provided that such taking is in compliance with the incidental take statement. The anticipated level of incidental take for the grizzly bear, gray wolf, bald eagle and peregrine falcon for the Flathead National Forest Plan, as amended, is zero. Accordingly, no incidental take is authorized. Should any take occur, the Forest Service must reinitiate formal consultation with the Service and provide the circumstances surrounding the take. Our conclusion is based on the following:

1. The Forest Plan, as amended, is a programmatic planning document under which specific Forest activities (recreation, grazing, timber harvesting, roading, etc.) are planned and implemented under the constraints of standards and guidelines contained in the Plan. Therefore, the Forest Plan and actions implemented under the "ordinance of the Forest Plan, if conducted in full compliance with both the Forest Plan standards and guidelines are not expected to adversely affect or result in any incidental take of listed species;

2. The Forest Plan, as amended, does not provide a "right" to any individual to conduct an activity or make an irreversible commitment of Forest resources;

3. Project level activities implemented under the direction of the Forest Plan, as amended, will undergo their own NEPA reviews and Section 7 consultation, if required by 50 CFR S402; and

4. No site specific project level activities have been analyzed in the Forest Plan, as amended to date, or, are any authorized by the January 1986 Decision Notice on the Forest Plan that may result in incidental take.

Incidental take will be analyzed and statements will be provided in biological opinions issued for project level activities that are implemented under the Forest Plan, as amended, and that undergo formal consultation. The level of anticipated incidental take, if any, will depend upon how they are designed and implemented and the degree of compliance with the Forest Plan standards and guidelines.

This completes our amendment to the 1985 and 1989 biological opinions on the Flathead National Forest Plan and Plan Amendments, respectively. Reinitiation of formal consultation is required if the amount or extent of incidental take is exceeded, if new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, if the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion, or if a new species is listed or critical habitat designated that may be affected by the action. Your cooperation and assistance in using the Forest planning process to help assist in the conservation and recovery of endangered and threatened species is appreciated.

Sincerely,

Kemper M. McMaster

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Acting State Supervisor
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DRHARMS/clh

"Take Pride in America"

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APPENDIX A

United States
Department of
Agriculture

Forest
Service

Flathead National Forest
1935 Third Avenue East
Kalispell, MT 59901

REPLY TO: 1920/1570 Date: 6/9/89

SUBJECT: Your 2/22/89 Opinion, M.19 Flathead NF Plan Amendments
(6-MT-89F-002)

TO:
Kemper M. McMaster
Acting State Supervisor
Montana State Office USFWS
Attn: Dale Harms
Federal Bldg. U.S. Courthouse
301 S. Park, P.O. Box 10023
Helena, Montana 59626

Thank you very much for the information provided in your Biological Opinion on the proposed LRMP amendments transmitted for your review December 29, 1988. We are enclosing for your review the draft final Amendments 8 through 13 which show the changes to be made to the amendments that provide standards for T & E species. The changes are evident by comparing the enclosed draft final amendments to those proposed in December, 1988. The changes are a result of the recommendations in your Biological Opinion and public input.

Amendment No. 8 is to clarify the intent of LRMP General Standard No. 1 providing an assurance that standards are not discretionary, and that any deviation from LRMP standards at the project level will require an amendment to the LRMP. The enclosed draft final has retained the intent, but additional language describing the amendment process in more detail along with strengthening the non-discretionary intent of LRMP standards has been added.

Substantial changes to Amendment No. 9 is due to the suggestions made in your Biological Opinion as no other public comments were received. Amendment No. 9 now retains the original LRMP grizzly bear standards and adds the Interagency Grizzly Bear Guidelines.

Amendment No. 10 adopts your suggestion to write a standard that clearly states the intent to manage roads in Management Situation I at 1 mile per square mile, and 2 miles per square mile in Situation II until the cumulative effects analysis model (CEA) is operational as stated in your May 15, 1985 Biological Opinion on the LRMP. In addition, Table II-6, p. II-55 will be amended by placing the number 1 in the geographic units which are predominately Situation I habitat as originally proposed. We believe this will clarify the standard as it was originally intended in the LRMP and your biological opinion.

Amendment No. 11, a standard requiring consultation with USFWS, is revised to read as recommended in your biological opinion.

Amendment No. 12 is changed to drop the proposed timing restrictions change relative to rendezvous sites (LRMP, p. II-38). Standard f.(7), p. II-38 will remain as now published in the LRMP regarding the restriction of logging activities within 1 mile of whelping dens and rendezvous sites 15 March - 1 July. There was concern expressed by timber industry regarding the proposed change. You pointed out in your opinion that the proposed change was not necessary to to meet the biological requirements nor is the change required to achieve recovery for gray wolf. Other Amendment No. 12 proposals, (i.e. direction to use the Northern Rocky Mountain Wolf Recovery Plan and including the NRMWRP as an LRMP appendix), remains unchanged.

No concerns with proposed Amendment 13 were expressed from the public or in your biological opinion. We plan to issue amendment 13 as originally proposed, and to incorporate the addition of the American Perigrine Falcon Recovery Plan (Rocky Mountain Southwest Populations) 1984 as an unbound appendix as you recently suggested.

I believe that these changes do not cause an effect to the listed species or their habitat that was not considered in your previous biological opinion. We have previously furnished you with analysis of the amendments as proposed in December of 1988. Please give Bob Hensler, Tom Wittinger, or Fred Hodgeboom a call if you have questions.

EDGAR B. BRANNON, JR.
Forest Supervisor

Enclosures: Proposed Amendments #8 - 13

cc: Dale Harms, USFWS
RO-OGC, PP&B
Project File

AMENDMENT NO. 8

The LRMP is amended to change Forest-wide General Standard No. 1 on Page II-15 to read as follows:

1. **Standards are not discretionary. They apply to all National Forest System Lands and will be followed unless the standards are amended. Any and all amendments of the LRMP standards will be undertaken in compliance with NEPA and the amendment process of the NFMA regulations (36 CFR 219.10(f)), and with public involvement. Amendments may be undertaken in two ways: 1) Standard(s) may be amended for all future activities, or 2) Standard(s) may be amended for a single project only. A project-specific amendment of a Forest Plan standard may be undertaken if it is demonstrated during project analysis that it will fulfill the objective of the standard and related goals. The rationale for project-specific amendments to Forest Plan standards must be described in the project's Decision Memo, Decision Notice, or Record of Decision. A project-specific amendment authorizing an exception to a Forest Plan standard must be issued, by the Forest Supervisor, concurrent with the project decision. Project-specific amendments of Forest Plan standards will in every instance be made in compliance with the Forest Service's legal requirements under the Endangered Species Act, Clean Water Act, NFMA, NEPA, and all other applicable laws.**

   Standards established for threatened and endangered species conservation and protection are mandatory, and thus take precedence when there are conflicting uses. Project-specific amendments of such standards may be considered if they will fulfill the Forest Plan goals related to the conservation of threatened and endangered species. Any amendment to standards established for threatened and endangered species conservation and protection must be preceded by consultation with the U.S. Fish and Wildlife Service.

EDGAR B. BRANNON, JR.
Forest Supervisor

Date

AMENDMENT NO. 9

The LRMP will be amended as follows:

Page vii LIST OF APPENDICES (following the table of contents)

Add the following to the list of appendices available on request:

OO Grizzly Bear Guidelines, Interagency Grizzly Bear Committee, 1986

Pages II-26 and II-27

Amend item b. Management Situation to read:

b. Management Situations **and Direction**

Ensure that all management activities and projects are planned, designed and implemented in accordance with the Interagency Grizzly Bear Guidelines, Interagency Grizzly Bear Committee, 1986, see unbound Appendix OO to the LRMP.

NOTE – The material from (1) Management Situation on the top of page II-26 through (3) Management Situation 3 (d) near the bottom of page II-27 has been eliminated. All of that material is replaced by the descriptions and management direction on pages 3 and 4 of the IGBG. The IGBG are added to the list of LRMP unbound appendices.

EDGAR B. BRANNON, JR. Date
Forest Supervisor

AMENDMENT NO. 10

The LRMP will be amended as follows:

Page II-30

Add an additional standard 18 as follows:

> **Manage access so that open road density does not exceed 1 mile per square mile in Situation I, and 2 miles per square mile in Situation II until the cumulative effects model is operational. Refer to Appendix C for additional standards concerning travel management.**

Page II-55 - Table II-6 is amended as follows:

Add a 1 to all asterisks (*) and amend the footnote at the bottom of the table to read:

> *** Within grizzly bear Management Situation I, access will be managed so that open road density does not exceed 1 mile per square mile. (See standard 18 on page II-30, and Appendix C for additional information on road management.**

EDGAR B.. BRANNON, JR. Date
Forest Supervisor

AMENDMENT NO. 11

The LRMP will be amended as follows:

Page II-15

Add an additional General Standard to the three listed:

4. **Initiate informal consultation procedures with the U. S. Fish and Wildlife Service in the early planning phases of site-specific projects if a "no effect/may effect" determination is unclear. If a "may effect" determination is made, formal consultation with the U.S. Fish and Wildlife Service is required.**

EDGAR B. BRANNON, JR.
Forest Supervisor

Date

AMENDMENT NO. 12

The LRMP will be amended as follows:

Page II-38

Add the following item under f. Wolf Habitat Management Direction:

(8) **Refer to the Northern Rocky Mountain Wolf Recovery Plan (Appendix PP) for additional wolf habitat management direction.**

Page vii LIST OF APPENDICES (following the table of contents)

Add the following to the list of appendices available on request:

PP	**Northern Rocky Mountain Wolf Recovery Plan, USDI, Fish and Wildlife Service, August 3, 1987.**

EDGAR B. BRANNON, JR. Date
Forest Supervisor

AMENDMENT NO. 13

The LRMP will be amended as follows:

Page II-23

Add the following standards to 5. THREATENED AND ENDANGERED SPECIES - BALD EAGLE AND PEREGRINE FALCON:

e. Bald eagle habitat components (winter roosts, feeding areas and spring/fall migration routes) will be inventoried and recorded along with nests as part of all site-specific analysis.

f. The Montana Bald Eagle Management Plan and the Pacific Bald Eagle Recovery Plan provide additional direction and guidelines which will be applied during site-specific analysis. These documents are incorporated into the LRMP as unbound appendices (Appendix QQ, Montana Bald Eagle Management Plan, 1986 and Appendix RR, Pacific Bald Eagle Recovery Plan, 1987).

g. The American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations), 1984 provides additional direction and guidelines which will be applied during site-specific analysis. This document is incorporated into the LRMP as an unbound appendix (Appendix SS, American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations), 1984).

Page vii LIST OF APPENDICES (following the table of contents)

Add the following to the list of appendices available on request:

QQ	**Montana Bald Eagle Management Plan, Montana Bald Eagle Working Group, June, 1986, USDI, BLM-MT-GI-001-4352.**
RR	**Pacific Bald Eagle Recovery Plan, USDI, Fish and Wildlife Service, Portland, Oregon, 8/25/86.**
SS	**American Peregrine Falcon Recovery Plan (Rocky Mountain Southwest Populations), 1984.**

EDGAR B. BRANNON, JR.
Forest Supervisor

Date

APPENDIX B

— "Security Areas," composed of the areas associated with the moist sites that provide security and other necessary components of elk summer habitat.

a. "Moist Sites" will be managed according to the habitat type - moist site recommendations.

b. Areas with "Moist Sites" will be managed during the elk use period, with open road densities that average 1 mile or less per square mile.

c. "Security Areas" will be managed according to the security area recommendations.

d. In both "Moist Sites" and "Security Areas," slash in managed stands will be reduced to levels that do not impede elk movement.

4. NONGAME WILDLIFE

a. Generally retain 10 to 15 tons per acre of down woody material as habitat for small mammals and ground nesting birds unless otherwise specified in management area direction.

b. Maintain old-growth habitat and snags at elevations below 5,000 feet at the number and distribution that will achieve the desired potential populations of old growth and snag cavity dependent species. Desired snag requirements are specified for each management area. The species designated for old growth and snag management in descending order of preference are: western larch, aspen, paper birch, black cottonwood, ponderosa pine, Douglas-fir, Engelmann spruce, subalpine fir, and other species.

5. THREATENED AND ENDANGERED SPECIES - BALD EAGLE AND PEREGRINE FALCON

Apply the following guidance to management activities that may affect bald eagle and peregrine falcon.

a. Prohibit disturbance-causing activities such as road construction, logging, and seismic exploration using explosives within one-half mile of active bald eagle or peregrine falcon nests during the nesting period February 1 through August 1.

b. Do a biological evaluation and initiate formal consultation with the U.S. Fish and Wildlife Service prior to implementing National Forest management activities that would result in changes in vegetation (such as logging and road construction) within one-fourth mile of known active bald eagle or peregrine falcon nests.

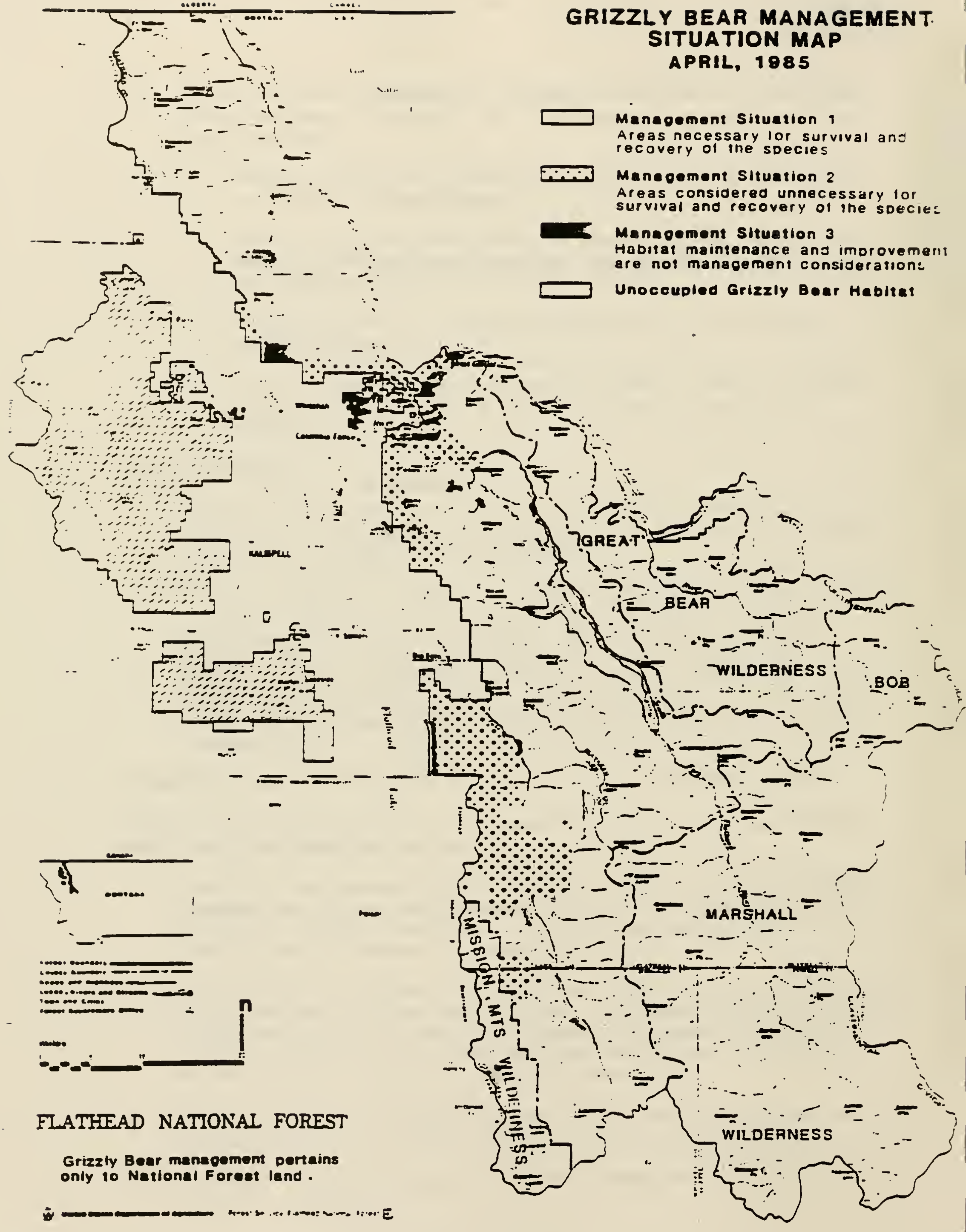
c. Do a biological investigation prior to the use of pesticides within 15 miles of an active bald eagle or peregrine falcon nest.

d. Prohibit cutting of snags for firewood within 300 feet of any river, lake, or reservoir.

APPENDIX C

GRIZZLY BEAR MANAGEMENT SITUATION MAP
APRIL, 1985

- ☐ **Management Situation 1** Areas necessary for survival and recovery of the species
- ▒ **Management Situation 2** Areas considered unnecessary for survival and recovery of the species
- ■ **Management Situation 3** Habitat maintenance and improvement are not management considerations
- ☐ **Unoccupied Grizzly Bear Habitat**



FLATHEAD NATIONAL FOREST

Grizzly Bear management pertains only to National Forest land.

6. THREATENED AND ENDANGERED SPECIES - GRIZZLY BEAR ("Grizzly Bear Guidelines")

a. Introduction

This section provides direction for grizzly bear management on the Flathead National Forest. It incorporates guidelines specific to the Flathead National Forest, and is intended to provide the manager with management direction for coordinating Forest activities to achieve recovery of the grizzly bear. The Forest will abide by any future revisions to these guidelines by the Interagency Grizzly Bear Committee.

The grizzly bear was identified as a "threatened" species in 1975 under provisions of the Endangered Species Act. As such, the species and its habitat receive a special protective status in all Federal programs and activities. There are two major grizzly bear population centers and four other areas containing self-perpetuating or remnant populations in the lower 48 States. The two major areas are known as the Yellowstone Ecosystem population and the Northern Continental Divide Ecosystem population in northwestern Montana. These two ecosystems appear to provide the best potential for survival and recovery of this species in the lower 48 States.

Although the Northern Continental Divide population may not have been studied as intensively as the Yellowstone, a considerable body of research is available to direct management. Data is available from Glacier National Park (Martinka), Border Grizzly Project (Jonkel), and the East Front Studies (Aune). Adaptable research from the Yellowstone Ecosystem also furnishes considerable information valuable for management.

There are 5,671,864 acres of occupied grizzly bear habitat in the Northern Continental Divide Ecosystem with varied population estimates of 440 to 680* bears. Eighteen percent of the occupied habitat is within Glacier National Park and 59 percent is National Forest, occurring on five administrative units: Flathead, Lewis & Clark, Lolo, Helena, and Kootenai National Forests. The occupied habitat is found in the State of Montana and is contiguous with habitat in Canada. The remainder of the habitat is on other public and private lands.

In this direction, habitat for the grizzly is divided into three Management Situation categories based on grizzly habitat value and population distribution. If changes in grizzly population and distribution occur, restratification of these categories may become necessary. Habitat suitability, combined with consistent grizzly observations and analysis of habitat components, would be the basis for restratification.

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* Grizzly Bear Recovery Plan.

b. Management Situations

(1) Management Situation 1

(a) Population and Habitat Conditions - The area contains grizzly population centers (areas key to the survival and recovery of grizzlies where seasonal or yearlong grizzly activity, under natural, free-ranging conditions is common*) and habitat components needed for the survival and recovery of the species or a segment of its population. The probability is very great that major Federal activities or programs may affect (have direct or indirect relationships to the conservation and recovery of) the grizzly.

(b) Management Direction - Grizzly habitat maintenance and improvement (improvement applies to Forest Service only), and grizzly-human conflict minimization will receive high management priority (FSM 2603). Management decisions will favor the needs of the grizzly bear when grizzly habitat and other land-use values compete. Land uses which can affect grizzlies and/or their habitat will be made compatible with grizzly needs, or such uses will be disallowed or eliminated. Grizzly-human conflicts will be resolved in favor of grizzlies unless the bear involved is determined to be a nuisance*. Nuisance bears may be controlled through either relocation or removal but only if such control would result in a more natural free-ranging grizzly population and all reasonable measures have been taken to protect the bear and/or its habitat (including area closures and/or activity curtailments).

(2) Management Situation 2

(a) Population and Habitat Conditions - The area lacks distinct grizzly population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. By definition, Management Situation 2 areas are those considered unnecessary for survival and recovery, although the status of such areas is subject to review and change according to demonstrated grizzly population and habitat needs. The effects of major Federal activities or programs on the conservation and recovery of the species are not generally predictable.

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* Guidelines for Management involving Grizzly Bears in the Greater Yellowstone Area, December 1979.

(b) **Management Direction** - The grizzly bear is an important but not the primary use on the area. Habitat maintenance and improvement and grizzly-human conflict minimization may be, in some cases, important but not the most important management considerations. Demonstrated grizzly populations and/or grizzly habitat use will be accommodated in other land use activities if feasible, but not to the extent of exclusion of other use needs. A feasible accommodation is one which is compatible with (does not make unobtainable) the major goals and/or objectives of other uses. When grizzly population and/or grizzly habitat use and other land use needs are mutually exclusive, the other land use needs may prevail in management considerations. If grizzly population and/or habitat use represents demonstrated needs that are so great (necessary to the normal needs or survival of the species or a segment of its population) that they should prevail in management considerations, then the area should be reclassified under Management Situation 1. Nuisance grizzlies will be controlled.

(3) **Management Situation 3**

(a) **Population and Habitat Conditions** - Grizzly presence is possible but infrequent. Developments, such as campgrounds, resorts or other high human use associated facilities, and human presence result in conditions which make grizzly presence untenable for humans and/or grizzlies. There is a high probability that major Federal activities or programs may affect the species' conservation and recovery.

(b) **Management Direction** - Grizzly habitat maintenance and improvement are not management considerations. Grizzly-human conflict minimization is a high priority management consideration. Grizzly bear presence and factors contributing to their presence will be actively discouraged. Any grizzly involved in a grizzly-human conflict will be controlled. Any grizzly frequenting an area will be controlled.

c. **Flathead National Forest Grizzly Bear Situation**

Current Occupied Habitat, 2,055,648 Acres

Administrative Unit	Mgmt. Sit. 1	Mgmt. Sit. 2	Mgmt. Sit. 3	Total
NF Acres	1,923,168	111,360	21,120	2,055,648
Percent of Occupied Habitat	94%	5%	1%	100%

The grizzly is a highly mobile animal. It is imperative to understand that although the grizzly's habitat has been stratified by management units, the ecosystem must continue to function as a whole; i.e., although areas are mapped as Situation 2, many bears will need to be on these areas during the spring as part of their total home range.

The precise carrying capacity of the Flathead National Forest's part of the Northern Continental Divide Ecosystem to support grizzly bears is not known at this time. The highest known densities in the continental United States occur in the Northern Continental Divide population. The Flathead National Forest must provide habitat capable of sustaining one bear per 15.5 square miles of occupied habitat to provide its contribution of 207 bears toward a recovered population.

d. Grizzly Bear Recovery Objectives

The Flathead National Forest's objectives for meeting the Northern Continental Divide Ecosystem's recovery goal are as follows:

(1) Achieve the recovery goal for the Northern Continental Divide Ecosystem.

(2) Manage all "Situation 1" areas with the grizzly bear as a primary resource which must be maintained or enhanced.

(3) Manage "Situations 2 and 3" areas in a manner that multiple-use activities will be compatible with the conservation and recovery of the grizzly.

e. Management Direction

All Management Functions, All Management Situations

(1) Maintain close contact with research organizations to ensure that current research data are being used in resource planning and administration affecting grizzlies.

At least once a year, District Rangers and biologists will meet to review current research findings and discuss their application in resource management. Review and revise guidelines as necessary to keep them current. Address research needs in terms of Forest management activities.

(2) Biological evaluations of all significant projects are required. Projects or land uses may proceed if a "No Effect" determination is made. If a "May Adversely Effect" determination results, the proposed project or land use will be modified for compatibility, eliminated, or appropriate consultation procedures with the U.S. Fish and Wildlife Service initiated.

(3) Identify and evaluate for each project proposal the cumulative effects of all activities, both existing uses and other planned projects, relative to both public and private lands.

(4) Measures to be taken to protect, maintain, and/or improve grizzly bear habitat and populations as a result of the biological evaluation will be specified in project design.

(5) Refine management situation stratification based on current grizzly habitat suitability, population, and distribution trends. All biological evaluations will assess the current status of management situation stratifications for accuracy and provide analysis data and recommendations for updating as necessary.

(6) Establish an active public information and education prograr discussing grizzly bear management, stressing goals, objectives, and steps required to recover the population.

(7) Carcasses of wildlife, livestock, or other attractants along highways, roads, and trails will be removed a distance of one-fourth mile from the travelway or otherwise made unavailable to bears. Removal should occur within 24 hours.

(8) The riparian zone is a basic component of suitable grizzly habitat. Its management will maintain grizzly bear habitat and will generally follow established guidelines within the Forest Plan.

(9) Active grizzly bear trapping sites that are not tended will be closed to other human use. Warning signs will be posted prior to installation of the trap.

(10) Contracts and permits will include a clause providing for the cancellation, suspension, or temporary cessation of activities if such is needed to resolve a grizzly/human conflict situation. Permits for temporary onsite facilities will require that camps be located to avoid seasonally important bear habitats and contain the grizzly bear clauses developed to prevent people/bear conflict. Contractor and permittees' cooperation in meeting grizzly management goals will be attained with applicable clauses and stipulations.

(11) Operating plans and special-use permits involving concerns over human or domestic stock food storage, handling, and garbage disposal will have appropriate clauses applied.

(12) Road management will be conducted to assist in meeting grizzly bear habitat management goals. When warranted, roads will be closed seasonally or yearlong, and where appropriate, area closures will be applied. Transportation plans and Forest visitor plans as well as individual project road systems will be evaluated regarding their impacts on habitat effectiveness.

(13) Feeding of bears will be prohibited.

(14) Areas with a history of grizzly/human encounters or areas with documented increased use by bears may be closed to human use temporarily, seasonally, or yearlong, in Situations 1 and 2.

(15) No open garbage dumps will be permitted. The Forest will work toward bear proofing all garbage handling facilities.

(16) Within Management Situations 1 and 2, provide security areas immediately adjacent to the influence zone of the project area. Decide on a site-by-site basis. Security areas should be 5,000 acres or larger in areas that are roadless or where the open road density averages 1 mile/square mile or less over the area during the bear use period.

(17) All land adjustment cases will be evaluated using the biological evaluation process for determining effects on the grizzly bear.

f. Guidelines

To assist land managers in meeting established goals for the grizzly bear, the following guidelines have been developed. These guidelines provide for more detailed application of the broad "Grizzly Bear Guidelines," for maintaining and improving habitat and in minimizing grizzly/human conflict potential.

It is recognized that in several areas of the Forest, such as the Swan Valley, important seasonal habitats occur that are dependent on private as well as National Forest System land. The inability of the Forest to exercise exclusive control of activities and programs that may affect the grizzly determined the Management Situation delineation. Activities and programs on Forest land will be evaluated in relation to the importance of the area to the grizzly bear.

The guidelines and the Flathead National Forest annual monitoring plan will be reviewed with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife, and Parks. The annual monitoring plan will provide rationale for stated levels of implementation.

To comply with Section 7 of the Endangered Species Act, biological evaluations consistent with these guidelines will be completed prior to projects being authorized or funded. The biological evaluation will determine the potential for the proposed action to adversely affect Federally listed species and provide recommended mitigation measures.

Timber Management, Management Situations 1 and 2

(1) Timber sale project plans will include grizzly bear habitat improvement if there is a determined need to improve grizzly bear habitat in the project area or develop habitat improvement techniques, provided the timber sale and/or wildlife funds are available to accomplish the improvements.

(2) Coordinate timber sale activities in time and space so that activities occur at a time when the area has the least biological importance to the bear. Strive to concentrate activities within the shortest time period.

(3) Where feasible, even-aged harvest units should be irregular in shape. Generally these units will be limited to topography with slopes less than 35 percent where tractor yarding will be permitted. Seldom will irregular-shaped units be created on steep slopes where cable yarding and broadcast burning is the only alternative. No point within the unit can be more than 600 feet from cover.

(4) When harvest units are located adjacent to natural or manmade openings, hiding cover will be maintained on approximately 75 percent of the opening's perimeter. Minimum width of hiding cover is 3 sight distances; therefore, the minimum width of leave strips should be at least 3 sight distances.

(5) Clearcutting of stands should not occur until adjacent harvested units qualify as summer hiding cover. Sales should be planned so that repeated entries over short periods are avoided.

(6) Maintain a minimum of 40 percent cover of each project analysis area with 20 percent in summer hiding cover and 20 percent in summer thermal cover distributed throughout the area.

Long-term management of grizzly bear habitat in project analysis areas will strive for even distribution of the following successional stages (wildernesses and roadless areas excepted):

Old Growth*	Pole
Mature	Shrub/Sapling
Immature	Grass/Forb/Seedling

(7) Timber sale receipts, collected for post-sale area improvement (Knudson-Vandenberg Act funds) may be used, if available, to enhance the grizzly habitat within a sale area.

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* Old growth will be provided within the riparian area on a Forest-wide basis.

(8) Consider habitat management schemes to reestablish and maintain whitebark pine as a component of suitable habitat. Additional research is needed.

Fire Management, All Management Situations

(1) Grizzlies derive much of their energy from the fruits of shrubs, including huckleberry and buffaloberry. Burns resulting from wildfires in this century are important producers of fruiting shrubs which provide grizzly food energy. Natural fire frequency appears necessary to maintain or expand burn components. Prescribed burning in habitat types which are not managed for timber production will be implemented through natural and planned ignition to approximate a natural fire frequency. Forest components known to have the greatest potential for improvement will receive priority. Additional research is needed.

(2) On all project fires the resource coordinator will evaluate ongoing and potential impacts on the grizzly.

Range Management, Management Situations 1 and 2

(1) All livestock use on allotments, including recreation horse allotments, will be evaluated by the biological evaluation process for its effect upon grizzlies and/or their habitat. Evaluation will follow the direction established for preparation and revision of allotment management.

(2) Grazing activities with potential for affecting the grizzly bear, as determined in the biological review, will be modified so as not to adversely affect the grizzly bear and its habitat.

(3) Allotment management direction will specify, when applicable, measures to protect in time and space food production areas vitally important to grizzlies (i.e., wet alpine and subalpine meadows, stream bottoms, aspen groves, and other riparian areas) from conflicting and competing use by livestock.

(4) Livestock grazing on important spring habitat for grizzlies should be deferred until after July 1.

Recreation Management, All Management Situations

(1) Outfitter/guide permits will specify measures to be taken in terms of food storage, refuse disposal, and wild meat storage. Work with Montana Department of Fish, Wildlife, and Parks on enforcement of the permit regulations.

(2) An information brochure summarizing human conduct in grizzly country will be made available to the public. A supply of the brochure will be made available to local offices of the Montana Department of Fish, Wildlife, and Parks.

(3) In Situations 1 and 2, when recreational use is determined to exceed grizzly tolerance levels as determined through biological analysis, some means of restriction or reduction of human use should be implemented.

(4) Reduce grizzly mortality illegally occurring during big-game hunting seasons by:

  (a) Assisting Montana Department of Fish, Wildlife, and Parks in making information available to all hunters to assist them in distinguishing between black and grizzly bear.

  (b) Assisting Montana Department of Fish, Wildlife, and Parks in issuing special warnings to hunters using areas frequented by grizzly bear.

  (c) Road closures in key grizzly bear habitat.

Minerals and Special Uses, All Management Situations

(1) All oil and gas planning, leasing, and implementing activity on the Flathead National Forest will be in accordance with the EA (Environmental Assessment), Flathead National Forest, 1980, other NEPA documents covering the portions of the Forest not covered by the 1980 environmental assessment, or other NEPA documents or processes that may be required by the current litigation challenging that 1980 EA.

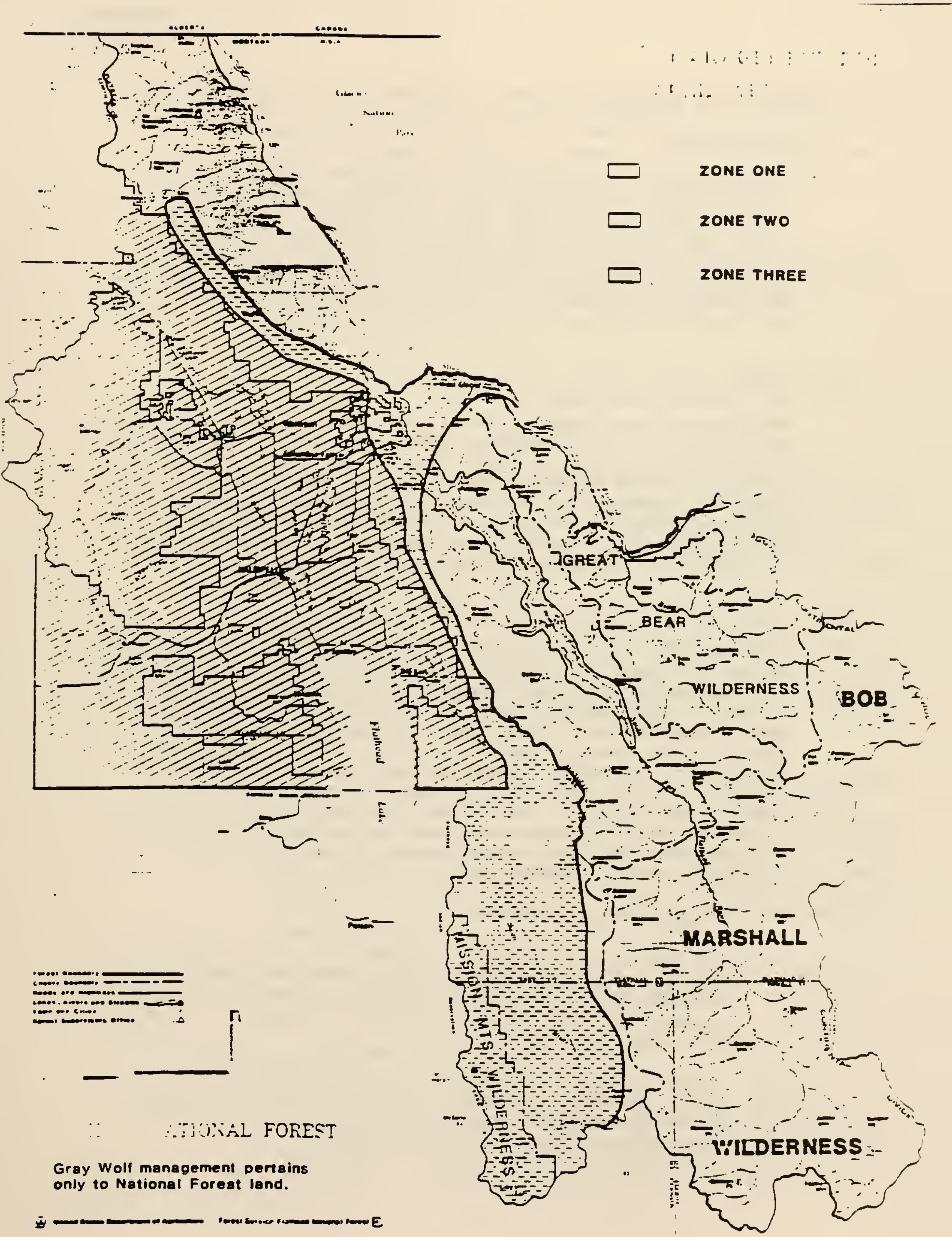
(2) Scheduling of mineral exploration and other development activities will be established so as to provide security areas immediately adjacent to project analysis areas.

(3) Temporary living facilities for exploration and/or development personnel may be onsite but with restrictions as necessary. Offsite camps will be encouraged. Approved camps will include restrictions on food storage, garbage disposal, firearms, and domestic pets.

(4) Avoid superimposing activities on seasonally important grizzly bear habitats which may adversely affect the species or reduce habitat effectiveness.

(5) Establish flight patterns (corridors) in advance when activities require the use of helicopters. Flight patterns should be located to avoid seasonally important grizzly bear habitat constituent elements and habitat components during bear-use periods. In some instances altitudinal restrictions could safequard bears as well as flight corridors.

APPENDIX D



Gray Wolf management pertains only to National Forest land.

7. THREATENED AND ENDANGERED SPECIES - GRAY WOLF ("Gray Wolf Guidelines")

a. Introduction

These guidelines provide management direction for the gray wolf on the Flathead National Forest. Most of these guidelines were developed from the Draft Northern Rocky Mountain Wolf Recovery Plan. Additional guidelines may be developed and incorporated as more data is developed on multiple-use and gray wolf management. The Forest will abide by any future revisions to these guidelines necessary upon completion of the Gray Wolf Recovery Plan by the Fish and Wildlife Service.

b. Status

The Northern Rocky Mountain Wolf (Canis lupus irremotus), or Gray Wolf, was listed as "Endangered" by the Secretary of the Interior in 1973 (38 Federal Register 14678, June 4, 1973) and with 1978 provisions of the Endangered Species Act of 1964. "Endangered" means that a species is in danger of extinction throughout all or a significant portion of its range. This act places obligations on Federal agencies and projects under Federal license or sponsorship to protect endangered species and their habitats.

c. Recent Findings and Current Distribution

Evidence compiled by the University of Montana Wolf Ecology Project indicates wolves are expanding their range southward from Canada into northwestern Montana. Immigration from northern ranges may account for increased activity being reported in the North and Middle Forks of the Flathead River drainage and along the Rocky Mountain Front south of the U.S.-Canadian border. Information on Gray Wolf in and around Glacier National Park (Singer 1975) is available and continues to be developed through the Wolf Ecology Project (Ream, et al., 1984). Studies in Jasper National Park of Canada (Carbyn 1974) and information compiled for the Yellowstone area (Weaver 1978) also furnish information useful for wolf management in the Flathead locale.

d. Wolf Management Considerations

(1) Wolf habitat has two primary components or attributes: (1) available prey, primarily ungulates (deer, elk, moose), and (2) security from disturbances. Vegetation, elevation, geology, climate, and other physical factors are immaterial as long as wolves have food and security.

(2) Wolves are social carnivores by nature and usually live in packs. As social carnivores at the top of the ecological pyramid, wolves need comparatively large spaces in which to find enough available prey and security.

(3) Stream and river bottoms appear to be used as important travel routes and gathering places in their daily and seasonal activities and for locating beaver, an important spring and summer food source. Roads may also serve as easy travel routes, especially when human access is limited.

(4) Ungulate winter/spring ranges, both traditional and transitional, are important areas for wolves in securing prey. Because wolves depend heavily on ungulates, increasing ungulate populations may improve the situation for wolf recovery. Protecting and improving beaver habitat may also improve the chances for wolf recovery.

(5) Reduction of human access can reduce wolf/people encounters and, thereby, reduce human-caused wolf mortalities.

e. **Recovery Area and Management Zones**

The proposed Northwestern Montana Wolf Recovery Area includes Glacier National Park, designated wildernesses (Bob Marshall, Great Bear, Lincoln-Scapegoat), and adjacent public lands. It generally coincides with the Northern Continental Divide Grizzly Bear Ecosystem. A major portion of Flathead National Forest lies within the proposed wolf recovery area.

(1) **Management Zone 1** - This zone contains key habitat components in sufficient abundance and distribution on an annual basis to sustain a viable wolf population(s). Generally it is an area greater than 3,000 contiguous square miles with less than 10 percent private ownership (excepting railroad grants) and less than 20 percent subject to livestock grazing.

(2) Management Zone 2 - This zone is established as a buffer between Zone 1 and Zone 3. It may serve as a travel corridor for colonizing animals and should contain some key habitat components (particularly ungulate winter ranges), but probably not in sufficient abundance and distribution to sustain a viable wolf population yearlong. Close association with people is a concern. These areas may be necessary for survival and recovery of the species through contribution of key habitat components during certain periods of time.

(3) Management Zone 3 - This zone contains established human activities and developments in sufficient degree to render wolf presence undesirable.

(4) Management Zone Guidelines

(a) Zone 1 - Wolf habitat maintenance and improvement and wolf-human conflict minimization will be a primary management objective. Management decisions will favor the needs of the wolf when wolf habitat and other land uses compete. Land uses should be planned and managed to enhance recovery of the wolf. Wolves determined to be a problem* may be selectively controlled under direction that will be provided in the Wolf Recovery Plan.

(b) Zone 2 - The wolf is still an important consideration in this zone, and management will be provided to at least maintain the habitat conditions that resulted in the area being classified as Zone 2. Wolf activity or needs will be accommodated if feasible, but not to the extent of excluding other high-priority land uses. A feasible accommodation is one which is compatible with (does not make unobtainable) the major goals and/or objectives of other uses. Wolves determined to be a problem may be selectively controlled under direction provided in the Wolf Recovery Plan.

(c) Zone 3 - Maintenance and improvement of habitat solely for wolves, and minimization of wolf-human conflict potential are not management considerations. Wolf/human/livestock conflicta will be resolved by control under direction that will be provided in the Wolf Recovery Plan.

f. **Wolf Habitat Management Direction**

(1) Biological evaluations shall be prepared on all significant projects and activities which have a probability of affecting wolves and their habitat. Projects, activities, or land uses may proceed if a "No Effect" determination is made. If a "May Adversely Effect" determination results, the project, activity, or land use will be either modified for compatibility, eliminated, terminated, or appropriate consultation procedures with the U.S. Fish and Wildlife Service will be initiated.

Projects, activities, and land uses will be monitored for compliance with the biological evaluation constraints and recommendations.

(2) Measures to be taken to protect, maintain, and/or improve wolf habitat and populations as per the biological evaluation will be specified in project design.

(3) Identify and evaluate cummulative effects of all activities for each project proposal, including recent, current, and planned.

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* There are 20,000 acres of private land along the flood plain of the North Fork Flathead River. This area is critical to the recovery of the wolf; however, it is important that the rights of private landowners are maintained as wolves are allowed to recover.

(4) Maintain active communications with research organizations to ensure current research data are being used in resource planning and administration affecting wolves and their habitat. As necessary, District Rangers and biologists shall meet to review current research findings and discuss their application in resource management. Review and revise guidelines periodically to keep them current. Address research needs in terms of Forest management activities. Monitor the application of guidelines to assure they are properly and effectively used.

(5) Refine management situation stratification based on current habitat suitability, population, and distribution trends. All biological evaluations will assess the current status of management situation stratifications for accuracy and provide analysis data and recommendations for updating as necessary.

(6) Establish an active public information and education program addressing wolf management and stressing goals, objectives, and actions required to recover the populations. Provide educational facts on wolf ecology, legal status, present population levels, and disturbance factors to Forest users through a strong I & E effort. Emphasize protective measures for allowing wolf populations to become viable. Emphasize the availability and efficiency of methods for controlling wolves where necessary.

(7) Logging activities should not be conducted in or near the following areas at certain times of the year: (a) within one mile radius of known or highly suspected wolf whelping dens and initial rendezvous sites 15 March - 1 July; (b) ungulate calving/fawning areas 1 May - 15 July; and (c) crucial ungulate winter ranges 1 December - 15 April. The dates and locations given may vary and should be based on the current ongoing wolf research.

8. WOODLAND CARIBOU

Cooperate with the State of Montana and U.S. Fish and Wildlife Service in further identification of the status of woodland caribou. If caribou populations are ascertained, the Forest will consider Plan amendment to assist in recovery.

9. RARE PLANTS

Work with the State and private organizations in the inventory of threatened, endangered, or sensitive plants. Develop conservation management direction for all such plants and plant communities located. Plant species of possible concern include:

Botrychium paradoxeem	Peculiar moonwort
Botrychium montanum	Mountain moonwort
Howellia aquatilis	Howellia
Grindelia Howellia	Howell's gumweed

APPENDIX E

Department of
Agriculture

rvice

Flathead
National
Forest

35 Third Ave. East
. Box 147
Kalispell, MT 59901

Reply to: 1920

Date: March 29, 1985

Wayne G. Brewster
Endangered Species Field Supervisor
U.S. Fish and Wildlife Service
Federal Bldg, 301 S. Park, Box 10023
Helena, Montana 59626

Dear Wayne:

We are willing to extend the consultation period as you suggested. We would like to have your completed Biological Opinion by April 24, if possible. We need to receive the opinion prior to completing many other aspects of the Forest Plan.

The 10 year timber sale schedule for the first decade (FY 1986-FY 1995) is not complete. We are trying to work it out now. The Forest Plan Supplement contains the 10-year schedule through FY 1990. As you probably know, our 10 year schedule is constantly changing from year to year, so it would not be meaningful to analyze planned sales beyond the next 4 to 5 years.

Each sale, when proposed, will evaluate the cumulative impact of all previous and current sales and other activities that affect bear habitat and populations. This then provides the safeguard that no sale will be sold that fails to pass the cumulative impact analysis. If we anticipate more sales than can actually fit within grizzly bear constraints, then we'll have to either reduce volumes or shift sales to unoccupied areas.

Our biologists are involved with developing the 10 year sale plan, so that level of sale planning considers possible grizzly bear needs on a long term basis. The "final" 10 year sale plan cannot be completed until we receive your biological opinion.

On an overall basis, I don't think we can provide you with any more meaningful data to review at this time. We plan to come out with a draft of the Final Forest Plan in May or early June, which will contain our 10 year timber sale schedule. We would be happy to review that draft with you.

If you have any further questions, please give me a call.

Sincerely,

Ed

EDGAR B. BRANNON, JR.
Forest Supervisor

cc: Bob Gale, RO

BIOLOGICAL ASSESSMENT
FOR FEDERALLY-LISTED
ENDANGERED, THREATENED, AND PROPOSED
WILDLIFE SPECIES

Draft EIS, Amendment No. 10 (Road Management)
To The Flathead National Forest Land and Resource Management Plan

I. INTRODUCTION

Under provisions of the Endangered Species Act, federal agencies are directed to seek to conserve endangered and threatened species and to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of their critical habitats.

This biological assessment displays the evaluation of possible effects to endangered, threatened, and proposed species known or that may occur in the project area.

II. PROPOSED ACTION

A. Project Name

This project proposes Amendment No. 10 of the Flathead National Forest Land and Resource Management Plan (LRMP).

B. Proposed Project and Purpose

The Forest Service proposes amendment of the January 1986 Flathead National Forest Land and Resource Management Plan (LRMP) to clarify Open Road Density (ORD) standards relative to travel management on Forest roads. This amendment clarifies the ORD standards for various areas within the Forest, and how the standards will be implemented and monitored. The objective is to provide programmatic travel management direction until the grizzly bear cumulative effects model is operational, through a consistent process for calculating and applying an interim ORD standard.

The Proposed Action will result in LRMP Amendment 10 and establish a standard in all grizzly bear Management Situation 1 (MS-1) areas of 1.0 mi/mi^2 maximum ORD during the period April 1 to November 30. A standard of 2 mi/mi^2 maximum ORD during the period April 1 to November 30 will be established in the grizzly bear Management Situation 2 (MS-2) on Crane Mountain on Swan Lake, Lake Five, and Lion Lake area on Hungry Horse and the Southside of Teakettle Mountain on Glacier View ranger districts (71,600 National Forest acres). All other MS-2 lands will be treated the same as MS-1. In grizzly bear management areas, ORD will be calculated over defined 5,000 to 15,000 acre areas (see EIS maps), including State and industrial forest lands and their roads. Table II-6 on page II-55 of the LRMP will be replaced to reflect these standards. In non grizzly bear areas, the standard will continue to be applied over Geographic Units; however, site-specific project effects will be evaluated on the 5,000 to 15,000 acre areas.

The ORD standard being addressed in this proposal does not apply to or consider projects such as a timber sale, oil and gas development, etc. Appropriate short-term road management will be implemented based on the site-specific considerations and other standards and guidelines in the LRMP. Appropriate site-specific road management or mitigation measures will provide adequate wildlife security during the life of the project.

The travel management under consideration is for the road system on the Flathead National Forest. The primary mode of travel to be addressed in this analysis is motorized use (including snowmobiles, motorcycles, ATV's, etc., as well as conventional vehicles) on roads. This proposal will influence the degree of motorized access permitted on existing and future roads within the Flathead National Forest. This proposal will not determine whether a road continues to exist or is constructed.

Off-road use, including snowmobiles, on areas and trails was considered in the scoping but was dropped from this proposal. This proposal focuses on the issues and concerns centered around the ORD standards.

This proposal does not address site-specific road management issues. It is limited to clarifying the LRMP with respect to what the average ORD standard is and where, when, and how the standard will be applied. This includes clearly stating the ORD standards, definitions of terms, and establishment of processes which will then be applied in subsequent site-specific road management decisions.

To ensure compliance with the Endangered Species Act, the U.S. Fish and Wildlife Service was informally consulted throughout the analysis.

This proposal also considers Plum Creek Timberlands and State of Montana forest lands within a general forested environment that are intermingled with National Forest System lands. A master agreement between the parties established a framework for a joint road management effort (April 18, 1989, EIS see project files). Full implementation of this proposal will be dependent on joint management efforts with Plum Creek Timberlands and Montana Department of State Lands.

During project development and analysis it became apparent that increased definition of variables associated with the ORD standard was required. The following definitions are considered a part of the ORD standard for this analysis:

Definitions

Road - A route, constructed or evolved, more than 300 feet in length that is reasonably and prudently driveable with a conventional passenger car or pickup.

Open Road - A road is considered open when it is reasonably and prudently driveable by a conventional passenger car or pickup and is not obstructed by a physical barrier or has no administrative restriction. If motorized vehicle use levels exceed five vehicles per week, a road is considered open.

Processes

☐ Effectiveness of restrictions will be monitored relative to the ≤5 vehicles per week. The "five vehicles per week" will be treated as a maximum, with administrative use managed accordingly. Administrative use will be managed on a "check in" system to reduce habitat disturbance during key wildlife use periods.

☐ ORD is calculated by dividing the number of miles of open road by the number of net applicable square miles in the analysis area.

☐ Roads on small private land ownership and their area (acres) were not included in the ORD calculation. Roads are a focus of activity and, therefore, impact wildlife in the general forest environment. The general forest environment includes all National Forest System, and industrial forest (primarily Plum Creek Timberlands), State of Montana lands. Conversely, roads are only a minor proportion of the activity or impact associated with other private lands. These other private lands include residential development and associated structures, access roads, highways and County roads, domestic livestock and associated facilities, etc. A calculation of road density could be done for these other private lands, but it is not a true picture of the impacts associated with these areas. Because road density is not a reasonable or proper index of impacts associated with residentially-developed private lands, these lands and associated roads were not used in calculating road densities. Rather, impacts associated with these private lands were incorporated into the Cumulative Effects Analysis. In the calculation of effects, it was assumed that these private lands had high activity levels. Also, since highways and County roads tend to be associated with developed private land areas, they were included in road density calculations only when non-industrial private land was less than 15 percent of the analysis area being considered.

☐ The LRMP road management direction, other than the ORD standard, is satisfied first. Then, additional restrictions are applied as needed to satisfy the ORD criteria. The assumption was made that the existing situation complies with or exceeds the amount of restrictions needed to satisfy all road management direction except the ORD standard. This assumption and process results in some areas being constrained to an ORD that is less than required by the standard.

> **Example:** In the Bunker Creek drainage on the Spotted Bear District, the LRMP set specific road management direction resulting in an ORD considerably less than 1.0 mi/mi^2 (reference LRMP IV-45).

☐ The ORD standard being addressed in this proposal does not apply to or consider projects such as a timber sale, oil and gas development, etc. Short-term road management will be implemented based on site-specific considerations and other standards and guidelines in the LRMP. During the life of the project, appropriate site-specific road management and/or mitigation measures will be implemented to provide adequate wildlife security. The ORD standard as such would not apply in the project area during the project period.

☐ The 5,000 to 15,000 acre areas shown on the attached maps were used to calculate ORD.

☐ The original LRMP standards were used for all areas not in MS-1 or MS-2 grizzly bear habitat.

☐ The ORD standard is not applied in MS-1 or MS-2 grizzly bear habitat between December 1 and March 31.

☐ The ORD standard and its application is considered programmatic. This proposal anticipates that seasonal adjustments to these standards may be necessary over time, based on site-specific information for each BMA. Any adjustment raising the ORD for a BMA would require consultation with the U.S. Fish and Wildlife Service and a site-specific amendment to the LRMP. The primary site-specific factors that will form the basis for the adjusted ORD value will be:

- Unusual road configuration, such as a road being the boundary of the BMA.

- Specific habitat information that would provide a reliable prediction of the absence or presence of grizzly bear during a specific time period, and the value of the habitat to grizzly bear.

- Site-specific studies that verify the absence or presence of grizzly bear during a specific time period.

☐ The road inventory used in this analysis process was updated during the summer of 1988 and 1989 with an intensive inventory of all MS-1 and MS-2 grizzly bear management areas on National Forest System lands. Several hundred features were reviewed and if they were not physically eliminated, they were added to the Forest road inventory. The inventory is continuing outside grizzly bear management areas, and will be completed over the next few field seasons. The inventory process utilized the most recent aerial photography inventory, information furnished by the Swan View Coalition for the Swan Valley area, and a thorough ground search. The inventory process is dynamic and will continue on an annual basis, particularly as new photography or satellite imagery is acquired.

☐ The amount of motorized use on forest roads is important information for both recreation and wildlife management considerations. Estimates were developed of the amount of motorized use occurring on all forest roads. Each District developed road use estimates using traffic counter information and the collective judgement of District road managers. Road use estimates were developed for each of six seasons and six use classes (Table II-1). Weekly time frames and use class levels were used rather than precise numbers of vehicles per day, to reduce error rates and still provide useable data for analysis purposes.

TABLE II-1 - LEVELS OF USE AND SEASONS OF USE

LEVELS OF USE		SEASONS OF USE
Class	Vehicles Per Week	Dates and Season
1	≤ 1	April 1 - May 14 (ES)
2	2 TO 5	May 15 - June 30 (LS)
3	6 TO 20	July 1 - August 31 (SU)
4	21 TO 100	September 1 - October 14 (FA)
5	101 TO 500	October 15 - November 30 (HU)
6	> 500	December 1 - March 31 (WI)

☐ On-the-ground implementation of the ORD standard will begin when a decision on this proposal (Amendment 10) is adopted, and it is the intent of the Forest to complete on-the-ground implementation of the ORD standard within 1 year. Implementation will consist of employing a mixture of restriction devices as appropriate to restrict or close roads to meet the ORD standards. The devices will consist of signs, earth barriers, rock barriers, or gates. The type of device may vary over time, based on site-specific monitoring information which will evaluate the effectiveness of the devices. This proposal (Amendment 10) does not determine which actual roads will be restricted or closed - it only sets the density standards which will be met in each BMA of the Forest. Once Amendment 10 is adopted, each District will make determinations as to which roads will be restricted to meet the ORD standards.

III. Action Area

This proposal will establish programmatic road management direction for MS-1 and MS-2 grizzly bear management areas on the roaded portion of the Forest (see attached maps). The roaded area on the Forest outside of grizzly bear management areas will have roads managed with existing direction (LRMP II-55).

IV. Listed Species

The location and size of the proposed project area includes sites where the grizzly bear, gray wolf, bald eagle, and peregrine falcon may occur.

A. Current Status

Grizzly Bear

1. Management Area

The LRMP displays occupied grizzly bear habitat and Management Situation (1, 2, and 3) that have been designated on National Forest System lands on the Flathead National Forest. The identified occupied grizzly bear habitat area is 2,055,648 acres (LRMP II-27), of which 1,085,322 acres occurs within designated non-motorized use areas (LRMP III-94, 102, and 116). Therefore, the Proposed Action sets general road density criteria for 970,326 acres of designated grizzly bear habitat. No change in the current Management Situation stratification is proposed here.

2. Habitat Use

The Northern Continental Divide Ecosystem (NCDE) grizzly bear population generally tends to use habitats throughout the identified ecosystem, with considerable difference in the level of use based upon local habitat quality and population levels.

The grizzly bear population uses habitats that are elevationally distributed (Servheen, 1983; Aune, 1989; Mace per comm, 1990; McLellan per comm, 1989). These studies represent grizzly bear from all portions of the NCDE, with the exception of the central southern area. Annual habitat use patterns have resulted in reasonable predictability of the elevational distribution of grizzly bear within seasons.

These studies indicate that grizzly bear generally use lower elevations during the spring, higher elevations during summer, and have more variation in elevational use patterns during fall. Also, the information outlines various patterns of elevational use by different segments of the population. During summer, approximately 70 to 75 percent of the population used high elevation areas. Approximately 25 to 30 percent of the population used lower areas during summer on the Rocky Mountain East Front and in the South Missions. A substantial segment of North Fork grizzly bear used high elevations during all seasons.

3. Population

In 1986, the Montana Department of Fish, Wildlife, and Parks issued the "Final Programmatic Environmental Impact Statement on the Grizzly Bear in Northwestern Montana," which estimated 549 to 813 grizzly bear exist in the U.S. portion of the NCDE. This information was cited by the U.S. Fish and Wildlife Service amended biological opinion of July 18, 1989, on the LRMP as the best source of current estimates of grizzly bear numbers for the NCDE. The current estimated population of 193 to 294 grizzly bear on the Flathead National Forest is the sum of the Montana Department of Fish, Wildlife, and Parks estimates for the Red Meadow (100 percent), Southern Whitefish Range (60 percent), South Fork (100 percent), Swan Front (70 percent), Mission Mountains (60 percent), and Scapegoat (30 percent) density units (reference Montana Department of Fish, Wildlife, and Parks Final Programmatic EIS on the Grizzly Bear in Northwest Montana, 1986, pages 41 to 50 and 227 to 233).

One research need cited in the LRMP was for validation of population levels and trends for grizzly bear (LRMP II-12). In 1988, an intensive monitoring study was implemented in the South Fork area on the west side of Hungry Horse Reservoir. Preliminary results of this study (Mace and Manley, 1990) were used to estimate existing grizzly bear densities of approximately 1 bear per 62 square miles in the northern 48 square miles (13 percent of the study area), and 1 bear per 16 square miles in the southern 321 square miles (87 percent of the study area). This is similar to grizzly bear densities at the lower estimate reported in the Montana Department of Fish, Wildlife, and Parks 1986 FEIS for the South Fork Density Unit, and is similar to estimates used to formulate grizzly bear density coefficients for comparing the effects of LRMP land use prescriptions for that area (15.74 square mile/bear, LRMP FEIS II-89 and Appendix B-45).

The original Grizzly Bear Recovery Plan (1982) displayed an extensive list of population and mortality parameters for the NCDE grizzly bear population that must be met before recovery could be considered achieved. Population information is available, as indicated by the Montana Department of Fish, Wildlife, and Parks 1986 FEIS for various study areas across the NCDE, using variable methodologies at different points in time. The individual study area data were extrapolated to the total NCDE, in order to estimate the ecosystem population of grizzly bear. There was not agreement between members of the Interagency Grizzly Bear Committee (IGBC) upon interpretation of the data in relation to determining grizzly bear recovery.

This process does not represent a repeatable monitoring scenario. During 1986 to 1990, the IGBC Managers Subcommittee for the NCDE worked toward developing a monitoring program that would generate data upon which to base a recovery determination.

The IGBC NCDE Managers Subcommittee developed data requirements and implemented a monitoring process to determine population status in relation to recovery needs. The data requirements and rationale are presented in a "Draft Conservation Strategy for the Grizzly Bear Northern Continental Divide Ecosystem, Montana" (IGBC, 1989). The major difference between the proposed criteria and the 1982 recovery plan population statistics is the emphasis upon monitoring and using family groups as an index to population distribution and numerical adequacy. The recovery targets include the following:

- The unduplicated number of females with cubs (of the year) seen annually, must equal or exceed, as a running 3-year annual average, 12 females with cubs outside Glacier National Park and 10 inside.

- The distribution of females with young throughout the ecosystem (young can be cub, yearlings, or 2-year olds). Twenty-four BMUs have been identified in the NCDE. A female with young must be observed within 20 of the 24 BMUs on a cumulative 3-year basis.

- The annual number of known human-caused mortalities. No more than 14 total, of which not more than 6 can be females.

These data are available for 1987 to 1989, and items 1 and 3 are summarized in Table III-2. For item 2, over the 3-year period, females with young were observed in 21 out of 24 BMUs (Montana

Department of Fish, Wildlife, and Parks records, 1989; and IGBC NCDE Managers Subcommittee meeting notes, March 1990). All recovery targets were met for the 1987 to 1989 period.

TABLE III-2 - RECOVERY STRATEGY MONITORING, 1987 to 1989

	Females/Cubs Unduplicated		Known Human-Caused Mortality	
Year	Outside GNP	Inside GNP	Total	Females
1987	14	13	9	6
1988	12	13	8	6
1989	19	16	12	5

Gray Wolf

1. Management Areas

The gray wolf recovery area in Northwest Montana was identified in the recovery plan (1987), and the recovery area on the Flathead National Forest was divided into Management Zones (LRMP II-34). All three Management Zones occur within the area of the Proposed Action. The recovery area does not include the Tally Lake District or the Swan Lake District (Island Unit).

2. Habitat

Two programmatic habitat features outline the primary population regulators for wolves: (1) prey availability, and (2) security.

Interaction with humans is a major consideration in mortality risk to wolves (Mech, 1989). Since roaded access is the focus of the Proposed Action, effects of the Proposed Action on mortality risk will be evaluated. The current populations of ungulate prey are at high levels and appear to be increasing or stable (Flathead National Forest Annual Monitoring Report, 1988).

3. Population

The Wolf Ecology Project documented the re-establishment of wolves in Northwest Montana, Glacier National Park area. They monitored a population increase from one in 1979 to 30 in 1988 (Ream, et al, 1988). A general increase in the number and distribution of wolves appears to be occurring in Northwest Montana, with 154 observations documented by the U.S. Fish and Wildlife Service (1990) for all of Montana in 1989.

The distribution of observations for individuals, as well as breeding units, is wide spread in the general area (U.S. Fish and Wildlife Service, 1990). The number of observations of individuals on the Forest appears greatest in the North Fork area, but observations have been reported from all major drainage areas (U.S. Fish and Wildlife Service records). The current suspected and/or known distribution of breeding units on the Flathead National Forest is in the North Fork, with denning usually in Glacier National Park and Canada. Other breeding units are suspected and/or known to be adjacent to the Forest boundaries on all cardinal points of the compass.

Bald Eagle

1. Management Area

The proposed project area, and the entire Forest, occurs within Zone 7, Upper Columbia Basin of the Bald Eagle Recovery Plan (1986). The Montana Bald Eagle Management Plan (1986) summarized population goals for the area. Breeding pair numbers existing and potential were identified for all major drainage areas on the Forest. No habitat designations or zones were developed as a part of the LRMP, but areas associated with major water bodies, rivers and lakes, and nest areas were identified as important habitats. General Forest Standards were developed and incorporated into the LRMP (LRMP II-23 and LRMP Amendment No. 13, July 1989).

2. Habitat

As stated, general management areas for bald eagles were not developed in the LRMP. The standards (LRMP II-23) provide activity timing requirements for nesting period protection and the maintenance of snags associated with rivers, lakes, and reservoirs. General habitats are also protected and maintained through the management direction and Management Area development for riparian areas (MA-12 and MA-17, LRMP III-51 and III-80), which states, "Manage riparian areas throughout the Forest to enhance vegetation and wildlife diversity and maintain or enhance water quality and fisheries."

Site-specific habitat management plans are developed at the project level. Considerations for nesting territory management have been fully developed for three of 10 (one of the three is currently being written) known nesting territories where Flathead National Forest management may influence territory use. The remaining territories will have habitat considerations addressed at the project level, if projects are developed within the territory area. Roost sites and other concentration areas have not been found at this time, but project level direction requires surveys to document concentration sites (LRMP Amendment No. 13, July 1989).

3. Population

The current known nesting population is 10 active territories, with two being found in the past year. The current distribution of nesting territories by ranger district is Tally Lake 6, Swan Lake 2, and Hungry Horse and Glacier View 1 each. Thirteen young were produced from eight monitored nests during 1989 (Flathead National Forest Monitoring Report, 1990).

Peregrine Falcon

1. Management Area

No habitat designations or zones were developed as a part of the LRMP. General Forest standards were developed and incorporated into the LRMP (LRMP II-23 and LRMP Amendment No. 13, July 1989).

2. Habitat

Peregrine falcon nesting habitat requires site-specific identification and is not meaningful at this programmatic level. Project level analysis is required to evaluate habitat potential within the project area and utilize the LRMP standards in the development of projects when peregrine falcon habitat is a concern.

3. Population

The Flathead National Forest Annual Monitoring Report, 1986, indicated that, "to date, no evidence of nesting birds has been found. Peregrines seen in the Flathead Valley are believed to be migrants." This statement continues to be true, with no known nesting sites occurring on the Forest.

B. Species Considered in this Analysis

This document will display the effects of implementing road management at the programmatic level. The analysis areas are 5,000 to 15,000 acres in size and include the "general forest" environment. This level of project resolution allows for effects determination for species having home ranges that are large and that occur within the "general forest" environment. Thus, the scope of this analysis is suitable for the grizzly bear and gray wolf, but not for bald eagle and peregrine falcon. The bald eagle and peregrine falcon require project level habitat and nest site information and the application of road management also at that scale.

C. Species List and Concurrence

The list of species considered in this analysis includes Endangered and Threatened and proposed species that may occur on the Flathead National Forest. The species list included the bald eagle, gray wolf, peregrine falcon and grizzly bear. The U.S. Fish and Wildlife Service concurred with this list (U.S. FWS October 1, 1990) for analysis consideration.

V. ANALYSIS OF EFFECTS

The presence and use of roads tend to affect wildlife species in a number of ways. Road construction can destroy habitats, use of roads by humans can displace wildlife species from preferred habitats, and roads increase human access and encounter potentials (with subsequent risk of mortality). Habitat destruction due to road construction is generally a site-specific issue, while displacement and encounter potential is both programmatic as well as site-specific. This analysis will deal only with programmatic features.

The amount of open road as well as the level of use on roads have effects upon the useability of an area for sensitive wildlife. The ORD standard sets the amount of possible open road within an area, but does not deal with the level of use on roads. In order to analyze the effect of both the amount of road available and the level of use on roads, a Residual Impact Value was calculated.

The Residual Impact Value is an index of habitat suitability that incorporates effects from both road quantity (ORD) and human use. Residual Impact Value indicates the level of displacement and mortality risk expected due to roads and their use. The Residual Impact Value represents a comparison between a particular road management alternative and the same area if no road effects were present. Thus a Residual Impact Value of 10.0 indicates that habitat and mortality risk are unaffected by roads, while a Residual Impact Value of 1.0 indicates that mortality risk is potentially high and habitat is unavailable or very difficult to use due to displacement. Residual Impact Value is an index to how much roads and their use affect wildlife habitat suitability.

The process of calculating Residual Impact Values requires that actual road density be weighted (proportionally changed) to account for the level of use occurring on each road, and that impacts associated with weighted road density be estimated. The grizzly bear and elk calculation process in this document primarily utilized existing methods and coefficient values (Lyon, 1983; Leege, 1984; Cumulative Effects Model, 1987). Some choices were made as part of this analysis. The work of McLellan and Shackleton (1988), as well as discussions with the U.S. Fish and Wildlife Service (Harms per comm, 1989), was used to set bounds for the levels of vehicle use and the appropriate impact class for grizzly bear. Since the analysis is general and site-specific cover conditions are not known; where different coefficient values were present for cover and noncover, a coefficient value midway between the two values was used.

The intent of the road management program is to facilitate habitat use and reduce mortality potential for desirable wildlife. Some motorized administrative and non-administrative use of closed roads is occurring. The level of use on closed roads that is compatible with the intent of the program requires definition, as well as a determination of impacts associated with the use. The U.S. Fish and Wildlife Service's July 1989 amended biological opinion indicates that: "A road is considered closed when it is not reasonably driveable by a conventional vehicle due to natural obstructions or when a physical or enforceable administrative restriction or both is employed and managed such that motorized vehicle use level does not exceed 5 vehicles per week during the restriction period".

Data from the Glacier View (1988 and 1989) and Hungry Horse (1989) districts was used to estimate the number of roads being used. The data indicated that 9 percent of total roads were being administratively used during the May 15 to November 30 period. Estimated use was increased to 10 percent to account for undocumented administrative and non-administrative use. Effects from this level of use on restricted roads was included in the calculation process.

Analysis results are only as good as the ability of the coefficient values and analysis curves to predict how grizzly bear and elk respond to road use patterns. The values used for elk have been developed and used over considerable time (Perry and Overly, 1976) and received validation testing (Lyon, 1984). Whereas the values used for the grizzly bear were developed in 1987, with much less data and have not received validation testing.

The analysis process was discussed with Jack Lyon during May 1990. His comments emphasized the lack of validation testing for the grizzly bear coefficient values and that calculated impacts for high (>2 to 3 mi/mi^2) ORD are generally less accurate than for lower road densities.

The Residual Impact Value is an index of available space and opportunistic encounter potential. The lower the Residual Impact Value, the lower the available space and higher the encounter potential. Space and encounter potential within this analysis are surrogates for average habitat availability and average mortality risk for the area being analyzed.

The estimate of effects are relative or average for the area considered since neither site-specific habitat quality or wildlife use are included as variables within the analysis.

This analysis tool is an adequate predictor of road related risk of mortality, primarily if mortality risk is related to motorized use and varies with levels of use. Road/space analysis has not been an accurate predictor of hunting season elk mortality. The high level of pursuit that a large number of hunters practice when hunting elk has led to high exploitation in areas with, as well as without, roads. Road management, along with cover values, can influence the distribution of elk (Lyon, 1984), and the overall rate of elk harvest (Lonner and Cuda, 1982). Grizzly bear tend not to be pursued as aggressively as elk. Although this analysis does not deal with mortality in non-roaded areas, when mortality is a function of opportunistic encounter (human and bear encounters are proportional to human use levels), this analysis adequately considers the relative increased risk of mortality due to increased human roaded access.

The calculation process assigns different impact to roads based upon the estimated human use levels on the roads. The coefficient values displayed on page 11 indicates the relative impact assumed for roads of various levels of use (numbers/week), and whether the road use is motorized or nonmotorized. The calculation process was carried out for all seasons and all analysis areas.

The following outlines the coefficients, assumptions, and processes used for calculating Residual Impact Values for grizzly bear and elk:

"Weighted" miles were calculated by using use level coefficients for elk or grizzly bear. These coefficients were applied by use level, depending on whether a road was open or closed and season. Coefficients use the midpoint for cover/non-cover coefficients for both elk and grizzly bear included in "Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho" (Leege, 1984), and "Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem" (1987). The following use levels and coefficients were used:

MOTORIZED USE OF OPEN ROADS			
Vehicles/Week	Use Level	Elk Coefficient	Grizzly Bear Coefficient
≤ 1	1	*0.00	0.15
2 - 5	2	*0.05	0.30
6 - 20	3	0.70	0.30
≥ 21	4, 5, 6	1.00	1.10

* Denotes coefficient = 0.10 during fall and hunting seasons, as shown other times.

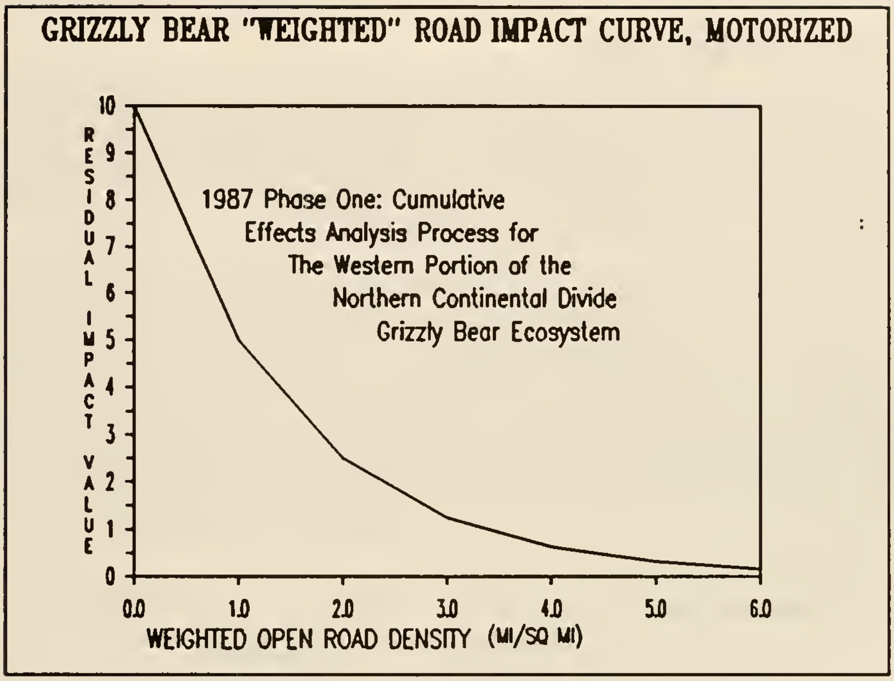
Restricted roads were assumed to have affects upon grizzly bear during early and late spring and to grizzly bear and elk during fall and hunting season. The coefficient used was 0.05 for grizzly bear and 0.1 for elk. The coefficient used for grizzly bear (0.05) approximates the impact value for non-motorized linear high use ("Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem," 1987).

"Road effects" are computed for elk using the "Weighted Road Model Curve", (Lyons, 1983) as displayed in the North Idaho model (Leege, 1984).

A curve, figure 1, was developed for grizzly bear using impact relationships displayed in "Cumulative Effects Analysis Process for the Western Portion Northern Continental Divide Grizzly Bear Ecosystem" (1987). The curve was developed using weighted road miles of 0 to 6 mi/mi^2 at 1 mi/mi^2 increments. Impacts were considered multiplicative when dealing with overlapping zones of influence. "Weighted" mile density were not assumed to have overlapping zones of influence between 0-1 mi/mi^2, while "weighted" mile density were assumed to all have overlapping zones when density levels were greater than 1 mi/mi^2. Impact reductions were made using the residual value of the previous density increments. Impacts from weighted road miles that were not whole miles were considered to have a value that lies on a straight line between the closest upper and lower whole mile density.

Data from the Glacier View (1988 and 1989) and Hungry Horse (1989) districts was used to estimate the number of roads being administratively used at ≤5 vehicles per week. The data indicated that 10 percent of total roads were being administratively used during the May 15 to November 30 period. Effects from this level of use on restricted roads was included in the analysis.

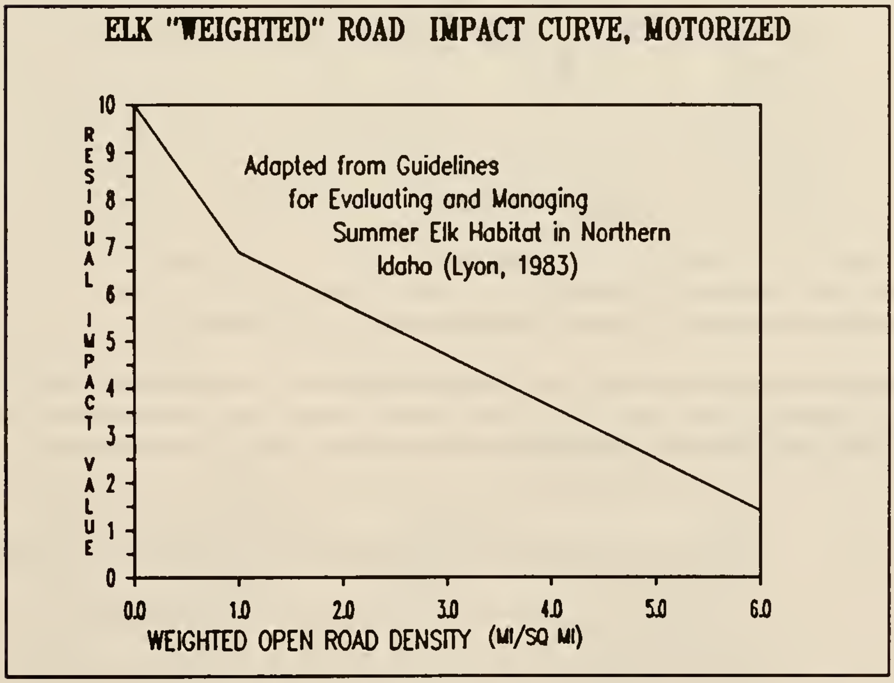
FIGURE 1



GRIZZLY BEAR "WEIGHTED" ROAD IMPACT CURVE, MOTORIZED

1987 Phase One: Cumulative Effects Analysis Process for The Western Portion of the Northern Continental Divide Grizzly Bear Ecosystem

FIGURE 2



ELK "WEIGHTED" ROAD IMPACT CURVE, MOTORIZED

Adapted from Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho (Lyon, 1983)

A. Grizzly Bear

1. Direct and Indirect Effects

The current level and proposed management of roading across the Forest was analyzed for effects upon grizzly bear. The Residual Impact Value for grizzly bear is an index of relative habitat usefulness and mortality risk. A processing of uncorrected road and use information was calculated as well as a processing of information that was correct for elevational distribution of grizzly bear use, roads miles, and area (acres).

The uncorrected process calculated effects as if variables, roads, bear use, and area were all homogeniously distributed in relation to each other. Whereas the corrected calculation process assumes a non-homogenious distribution of the variables. The corrected calculation process determined and used information concerning the distribution of variables above and below 5,000 feet, as well as seasonal variation for grizzly bear use. The Forest's GIS data base was the source of information for elevational distribution of roads and area, while grizzly bear use information from the Montana Department of Fish, Wildlife, and Park's South Fork Grizzly Study for 1988 and 1989 was used to approximate seasonal grizzly bear use. The elevational distribution above and below 5,000 feet of variables used in the corrected calculation process was the following:

Season	Percent Observation Bear Use		Percent Miles Roads		Percent Acres	
	Below 5000 feet	Above 5000 feet	Below 5000 feet	Above 5000 feet	Below 5000 feet	Above 5000 feet
Spring	39	61	80	20	52	48
Summer	20	80	80	20	52	48
Fall	26	74	80	20	52	48

Actual ORD varied by road analysis area as well as Ranger District, but averaged 0.6 mi/mi^2 for MS-1 and MS-2 areas, during summer, and ranged from 0 to 1.1 mi/mi^2 for areas managed at 1 mi/mi^2 and 0.4 to 2.0 mi/mi^2 for areas managed at 2 mi/mi^2.

The effects analysis utilized proposed road restriction information provided by Districts, and did not increase open road miles to the 1 or 2 mi/mi^2 that could be possible if roads were opened to the maximum level. The Residual Impact Values for the Forest were:

	Spring	Summer	Fall
Uncorrected	8.5	7.6	7.35
Corrected	8.7	8.5	8.1

The uncorrected and corrected Forest values bracket analysis values developed for the LRMP. Uncorrected values are lower and corrected values are higher than the 80 percent value developed in the LRMP analysis.

There was considerable variation of estimated effects between seasons and areas on the Forest. The spring to fall average Residual Impact Value for the Forest indicates an increased grizzly bear displacement potential and mortality risk (decrease in overall habitat suitability), compared to an unroaded environment, of approximately 20 percent, within the roaded area of the Forest. Impacts increased form spring through fall, as human use of the Forest increased. Forest Residual Impact Values were approximately 15 to 20 percent higher (8.0 to 9.5) in the early spring than during summer and fall, and were 10 to 15 percent higher on Spotted Bear and Glacier View than on Hungry Horse and Swan Lake, during most seasons. Yearly low Residual Impact Values occurred during the hunting season, with Hungry Horse and Swan Lake (Swan Unit) at approximately 7.3 (corrected value) and Glacier View and Spotted Bear at approximately 8.8 (corrected value). Impacts were least during early spring and greatest during the fall across the Forest, and were least on Spotted Bear and Glacier View and greater on Swan Lake and Hungry Horse districts during all seasons. Review EIS Tables D1 to D7 and E1 to E-7 for District and Forest uncorrected Residual Impact Values by season, with and without small tract private effects included, for grizzly bear.

Analysis areas managed at 1 mi/mi^2 (1,072,121 National Forest acres) generally had average decreased habitat values of 20 percent while areas managed at 2 mi/mi^2 (71,600 National Forest acres) had average decreased habitat values of 45 percent.

2. Cumulative Effects

The road level and management is considered static in time. Changes in the effects from road use changes nor increased total road miles as development occurs are not considered. Since the major impacts of roads to grizzly bear is linked to use levels, LRMP and IGBC standards must be followed in relation to project operations and seasonal use patterns of involved wildlife. The amount of open road miles must remain similar to the current level even with increases in total road miles, to achieve similar levels of habitat suitability. Additional decreases in habitat suitability will occur as management projects are superimposed upon the existing road management program. Since the ORD standard does not apply during project implementation, a suitable mitigation plan for each project, that includes road management considerations, will be undertaken in order to guard against unacceptable project level and cumulative effects. Human use on future roads, even though closed, will decrease habitat suitability.

Small private holdings at lower elevations (primarily on the Swan Lake, Hungry Horse, and Glacier View districts) affect overall habitat suitability for the grizzly bear. Because grizzly bear display great levels of both seasonal as well as individual variation in habitat use and may also be attracted to private lands, (with higher levels of mortality risk), private lands must be considered in the cumulative effects to the grizzly bear. Overall Forest decreases in average suitability were 4 to 6 percent greater when private lands were included. Decreased suitability levels were associated with impacts due to residential sites, barns (etc.), and roads. Overall activity levels were assumed to be greater on private land areas compared to general forest lands. Private land effects reduced calculated values by 4 to 6 percent on the Glacier View, and Hungry Horse districts, and 6 to 9 percent on the Swan Lake District. Private land effects to bears should be greatest during spring and least during summer, coincident with bear elevational use patterns. Because of lower Residual Impact Values on the Swan Lake, and Hungry Horse districts due to roads in the general forest environment, the addition of private land effects indicates marginal suitability for grizzly bear during periods when low elevations are used and/or human use levels are high on roads in a general forest environment.

B. Gray Wolf

1. Direct and Indirect Effects

The area where gray wolf recovery is identified, (Wolf Recovery Plan 1986) overlaps the occupied grizzly bear area on the Forest. Dispersal corridors are identified within areas not occupied by grizzly bear on the Tally Lake District. Thus the primary gray wolf recovery area on the Forest is covered by the road management standards for grizzly bear.

Additional site-specific considerations for activity control are contained within the LRMP II-38.

> "Logging activities should not be conducted in or near the following areas at certain times of the year: (a) within one mile radius of know or highly suspected wolf whelping deans and initial rendezvous sites 15 March - 1 July; (b) ungulate calving/fawning areas 1 May - 15 July; and (c) crucial ungulate winter ranges 1 December - 15 April. The dates and locations given may vary and should be based on the current ongoing wolf research."

The effects of roads upon wolves is relative to the affect upon prey availability and mortality risk. Elk are taken as prey for wolves on the Flathead, and they are also sensitive to road use and management. A historical review of road density and the removal of wolves from counties in Wisconsin (1926 - 1960) indicated that at road densities of >0.93 mi/mi^2, wolves failed to survive (Thiel 1985). Also, Mech (1989) reported high human induced mortality of wolves in an area of Minnesota where the road density averaged 0.73 km/km^2, (study area = 975 km^2). A model is available for evaluating road effects to elk. This analysis method will be utilized to evaluate effects to wolf prey as well as an index to mortality risk to wolves.

Road effects to elk followed similar patterns as they did for grizzly bear. Impacts were least during spring and increased into fall, as human use of the Forest increased. Average spring to fall values for elk were 2 to 3 percent higher (uncorrected 8.03 and corrected 8.52) than for grizzly bear. The lowest Residual Impact Values occurred on the Tally Lake and Swan Lake (Island Unit) areas, with lows of approximately 6.5 during fall and hunting season. Values were approximately 7.1 to 7.5 on Hungry Horse and Swan Lake (Swan Unit) and 8.4 on Spotted Bear and Glacier View during the same periods. ORD averaged greater than 2 mi/mi^2 on Swan Lake (Island Unit) and greater than 1 mi/mi^2 on Tally Lake, with most other District areas less than 1 mi/mi^2.

Review EIS Tables F1 to F7 for District and Forest uncorrected Residual Impact Values by season, for elk.

VI. DISCUSSION OF EFFECTS

A. Grizzly Bear

The analysis of effects indicates that impacts to grizzly bear are greatest in the Swan Valley and lower South Fork, and least in the North Fork, Middle Fork, and Upper South Fork. This coupled with population information from the Montana Department of Fish, Wildlife and Park's 1986 EIS, indicates that impacts are least in areas of higher bear numbers and greater in areas of lower bear numbers, this may be a cause and effect relationship, but is not known. It does indicate that the major portion of the Flathead grizzly bear population is being impacted at lower levels from road use on the Forest.

The MS-1 and MS-2 area on the Forest has varying density of grizzly bears, as displayed in the LRMP EIS and the Montana Department of Fish, Wildlife and Park's 1986 EIS. The information displayed above indicates that the bulk of the grizzly bear population is the least impacted from road effects, but some areas on the Forest that are to be managed for grizzly bear occupancy, Swan Valley, lower South Fork, areas with small tract private lands, and all MS-2 areas, are functioning with high calculated impact levels. The Residual Impact Values represent an index of habitat suitability and mortality risk, but threshold levels that indicate acceptable values have not been developed.

The monitoring information displayed for the 1987 to 1989 period indicates that grizzly bear family groups are occurring in suitable numbers and distribution across the NCDE to meet recovery. This monitoring information included observations from high impact areas on the Forest.

This analysis represents effects from a static situation relative to the road system and small tract private land holdings. It does not analyze effects from the inclusion of temporary activities, primarily timber sales and recreational activities. It appears that impacts can be absorbed at different rates across the Forest and will have varying effects on population potential and/or habitat availability. Greater care is required in implementing projects in areas that are currently sustaining high impact levels in order to maintain minimum acceptable levels of habitat suitability; while care is also required in areas of high grizzly bear numbers in order to maintain overall population requirements.

B. Gray Wolf

ORD and effects to elk appear to be at levels suitable to maintain prey and limit mortality risk to acceptable levels during the April 1 to November 30 period and across the MS-1 and MS-2 grizzly bear habitat area. The site-specific standards for management near big game winter range (LRMP III-37 and 64) and known dens (LRMP II-38) will provide adequate management during the covered periods and locations. Higher impact levels may be sustained during the December 1 to March 30 period in non-winter range areas and during all seasons in non MS-1 or MS-2 areas (Tally Lake and the Swan Lake (Island Unit).

C. Bald Eagle and Peregrine Falcon

Bald eagle and peregrine falcon habitat (nesting, roosting and other concentration areas) are not broadly distributed across the Forest. These habitats are site-specific rather than programmatic in nature. There are limited predictable effects from the development or implementation of Forest wide programmatic road management. The site-specific habitats for these species are protected at the project level through implementation of LRMP standards (II-23) that limit activity and habitat alteration in important periods and locations.

VII. DETERMINATION

The Proposed Action will have "no effect" on bald eagle and peregrine falcon, as long as project level LRMP standards are followed.

The Proposed Action is "not likely to adversely affect" the gray wolf within the recovery area. Two recommendations are required in order for this determination to be valid.

1. Project level considerations are necessary for areas adjacent to the recovery zone that may influence mortality risk.

2. Continued monitoring of population distribution and assessment of potential impacts from roads during the December 1 to March 30 period is needed. If wolves begin to populate areas where road impacts may occur within the general Forest during this period, additional road management may be needed.

The Proposed Action is "not likely to adversely affect" the grizzly bear. Two recommendations are required in order for this determination to be valid.

1. Since relatively high impacts broadly occur in the Swan Valley and Lower South Fork areas, project level mitigation must assure continued use of project areas by grizzly bears, during project implementation.

2. Cumulative effects analysis for project implementation must effectively consider small tract land ownership.

VIII. CONSULTATION

Informal consultation occurred with the U.S. Fish and Wildlife Service including Dale Harms throughout the analysis, beginning in 1988, and Robb Hazelwood primarily during 1990, .

Consultation also occurred with Jack Lyon of the U.S. Forest Service and Rick Mace of the Montana Department of Fish, Wildlife and Parks.

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